

Undergraduate engineering students' beliefs about their own intelligence

by

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## **Abstract**

This research endeavored to provide insight on the development of undergraduate engineering students' beliefs about their own intelligence. Carol Dweck's Mindset framework was used as the foundation. Mindset describes how fixed and growth mindsets can affect success. A fixed mindset individual believes that their traits are unchanging, while a growth mindset individual believes their traits can change and grow through effort. Prior research has found that the belief that one's traits can change typically leads to valuing criticism and effort, responding positively to challenges, seeking to improve upon past failures, and becoming more persistent than does the belief that traits are static.

The researcher developed, piloted, and refined an interview protocol and conducted interviews on undergraduate engineering students. The transcripts were initially analyzed with Attitude, Value, and Belief coding as described in the Coding Manual for Qualitative Researchers by Saldaña and a codebook was begun. Mindset and Attitude, Value, and Belief coding was found to be insufficient to adequately understand the beliefs of the students because they were focused on the individual. It was necessary to find a means to link the individuals with the engineering culture they lived in, were shaped by, and contributed to. To this end, the focus was shifted to the themes of Judgement, Effort, and Motivation. It was discovered that students were influenced by a variety of motivations, both internal and external. They tended to associate effort with the time spent on a task more than with the difficulty of the task. The students also felt pressure to find a correct amount of time spent on engineering school. Too little effort was a sign that the students were too lazy to be engineers, while too much was a sign that they were not smart enough to be engineers. Their images of themselves were influenced by their motivations

and their views of effort as well as their views of their peers and the judgements they perceived themselves to receive from others. This thesis details the process of creating an interview protocol, conducting interviews, coding, and discovering these themes, as well as the findings resulting from them.

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## **List of Abbreviations**

GPA: grade-point average .....	21
IRB: Institutional Review Board .....	14
OSU: Ohio State University .....	16
QR: quick response .....	8
STEM: Science, technology, engineering, and mathematics .....	3

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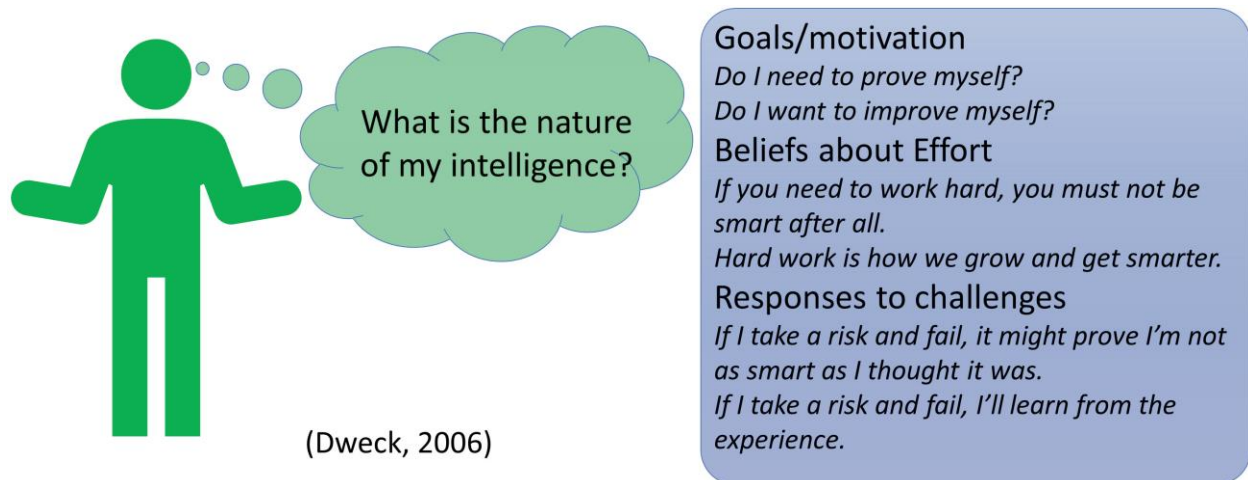
## **Chapter 1 - Introduction**

The goal of this project was to examine the development of undergraduate engineering students' beliefs about their own intelligence. The research was based around the theoretical framework of Mindset as described by Carol Dweck. Mindset, comprised of growth and fixed mindset, can apply to many aspects of one's sense of self: intelligence, personality traits, and abilities, to name a few (Dweck, 2006).

An individual with a fixed mindset believes that their traits are unchanging. They might learn new skills and find success, or they might experience setbacks and failure, but these experiences do not change who they are – rather, they happen because of who they are. Of course they received high test scores; they are smart. Of course they failed to pass that class; they are just not good enough. With this view of how one's own traits are mirrored by their outward achievements, one develops the need to constantly prove themselves. To protect their own self-image, they need validation and praise from others; therefore, they must constantly prove to everyone else how smart and talented they are. They must not be seen putting effort into their work – if effort is needed, they must not truly be good at it. They avoid challenges, as a single failure can prove that they are not smart enough or talented enough after all. A setback is likely to prompt them to give up (Dweck, 2006).

A growth mindset individual, on the other hand, believes that traits can change over time. While not denying that some people may seem to be naturally talented or inherently deficient in certain areas, they believe that through embracing challenges and working hard, just about anyone can develop a desirable skill or trait. Validation and praise may be welcomed, but so is constructive criticism – a failure is just an opportunity to learn and grow, not a devastating reflection on themselves. In this state of mind, effort says nothing about how smart or talented

they are, only about how smart or talented they may yet become. Challenges and setbacks might postpone the goal, but an individual with growth mindset recognizes them as just that: a postponement. Through persistence it can still be achieved (Dweck, 2006). Common manifestations of growth and fixed mindset are illustrated in figure 1.1.



**Figure 1.1 Graphical Representation of Mindset Framework**

People are not typically wholly fixed nor wholly growth mindset, but some combination of the two and to varying degrees. Often, they will have differing mindsets for different areas; for example, they might have a fixed mindset for mathematics or art, but growth for the other. It is also easy to temporarily influence someone's mindset through carefully chosen language; for example, after successfully completing a challenge, "well done, you must be very smart" will likely evoke a fixed mindset, while "well done, your effort clearly paid off" will likely evoke a growth mindset (Dweck, 2006).

It is easy to imagine how much more productive a person or even an environment can be when a growth mindset is adopted. Engineering, however, is one of the most predominantly fixed mindset fields (Leslie et al., 2015). It is commonly seen as a field for smart people. It is

true that engineering is difficult, but when faced with the notion that effort is a sign that someone is not smart, it becomes monstrously so.

This idea is related to other concepts that already exist in literature. STEM fields tend to be thought of as fields requiring their members to be inherently well suited for it, and to possess a sort of innate brilliance (Leslie et al., 2015). People also tend to subconsciously separate the terms “intelligent” and “smart,” where “intelligence” might apply to any sort of skill while “smart” is for skills generally associated with STEM fields such as mathematics. After separating the two terms like this, they tend to think of “smarts” as the more important one (Dringenberg et al., 2019). The ideas society has as a whole about what “smart” is and looks like tends to cause many people extra difficulties in “smart people fields,” particularly for underrepresented groups. This then cycles to perpetuate those very stereotypes (Hatt, 2016; Leslie et al., 2015).

Furthermore, when one fails to live up to what they see as the standard for their school or workplace, this can bring on a sense of shame, which can lead to furthering those same standards (Huff et al., 2021). It has also been found that the majority of people truly have no idea where they rank in comparison to others in terms of competency; especially among the unskilled, individuals tend to classify themselves as “slightly above average” (Kruger and Dunning, 1999). In addition, not knowing how they truly compare to others, people tend to inflate their opinions of the people around them as well in order to bolster their own self-image (Alicke et al., 1997).

The goal of this research was to gain a better understanding of students’ beliefs about their own intelligence. Beliefs are complex, so participant interviews were chosen as the methodology to gain an in-depth analysis of individual students. The first step was to create an interview protocol. Starting with a rough draft, I did practice interviews with lab mates and coresearchers. Following that, more interviews were conducted with student volunteers, and after

four or five of these interviews, the protocol would be revised. This process was repeated until we felt we had an informative protocol with which to conduct our final interviews.

In the final interviews, students in their freshman and senior years were selected with a goal of having a variety of mindsets and to approximately reflect the demographics of the College of Engineering. Once these interviews had been transcribed and anonymized, we began coding them with Attitudes, the way one feels about something; Values, the things one holds to be important; and Beliefs, the underlying experiences, knowledge, opinions, goals, morals, prejudices, etc. that attitudes and values stem from (Saldaña, 2016). From this initial coding three major interconnected themes emerged: Judgement, Effort, and Motivation.

Judgement encompasses three basic components: the way a student judges themselves, the way they judge others, and the way they perceive others to judge them. These, like the themes themselves, are not independent from each other. The way students feel themselves to be judged by their teachers, peers, families, and other outside influences affect the way they judge themselves. Likewise, they make judgements of themselves based on their judgements of others, especially their peers, and vice versa.

Effort is a nuanced concept for engineering students. The way they perceive their own efforts does not always match the way they perceive the efforts of others. The same can be said for efforts that produce satisfactory results and those that do not. Overall, a concept of how much effort is the right amount of effort has emerged: to be an engineer, one must put forth a certain amount of effort. However, if one must put forth more than that certain amount of effort, they probably do not have what it takes to be an engineer. In this way, time management is important for these students, but its meaning appears to have been warped.

Motivation largely fits into two categories: intrinsic and extrinsic. Intrinsic motivators can include learning, pride, goal fulfillment, self-worth, and a sense of responsibility or work ethic. Extrinsic motivators may be things like grades, finances, scholarships, job opportunities, prestige, social image, and external validation.

I also found that the students demonstrated behaviors described in existing literature. When comparing themselves to other students, especially if they were placed in a hypothetical situation where they were outperformed academically by their peers, they often tried to come up with reasons why they did not perform as well. Perhaps there were two test versions, and one was more difficult than the other, or they had less time to study than usual before the exam. If they were presented with a situation where those excuses were no longer viable, they often switched to overestimating their peers in order to protect their own sense of self, a phenomenon known as the genius effect. Students also expressed that because they were in an engineering field, they expected their peers to be smarter than average people. This expectation could be used as a defensive mechanism for when they do not do as well as their classmates and can also elevate their self-esteem when they do better than their peers (Alicke et al., 1997).

Another concept the students expressed was a sense of professional shame. While several would react to falling short of an expectation with guilt, in which they would reflect upon specific actions and usually look for ways to improve in the future, others would instead react with shame and feel the impact of their failure as a mark on their whole worth. The experience of shame can result in looking for scapegoats to blame, seeking validation from some other source, or by reinforcing the expectations that they failed to meet on others. In particular, shame seemed to be omnipresent in the students' feelings about effort. They were concerned with whether they



put in the correct amount of effort into their studies, whether their peers or teachers thought they were lazy, but also critical of the amount of effort their peers demonstrated (Huff et al., 2021).

In response to the experiences the students were asked to talk about, both real experiences and hypothetical, successful and not, they would also speak of their reactions to them. The situations where they underperformed in particular showed both healthy and unhealthy coping mechanisms. Sometimes a bad grade or another unsuccessful venture was viewed as an opportunity to improve. Students would revise mistakes on exams, resolve to work harder for future tests, reflect on any actions or behaviors that might have caused them to fall short of expectations, and seek advice or help from others. Other times, the participants would seek some reason beyond their control to blame; perhaps there were two test versions of unequal difficulty, or the instruction was poor quality, or they simply had not had enough time in their schedule to study adequately. Some students even appeared to try and give themselves a scapegoat before taking the exam at all; for example, one student seemed to be intentionally scheduling too many hours at work simply so that she could always have the excuse of not having enough time to study.

Based on my findings, in the conclusion of this thesis I will present ideas on how to help bolster student success.

## **Chapter 2 - Interviews**

### **Chapter 2.1 – Initial Protocol and Preparation**

To begin research, I first needed an initial interview protocol. I began by looking at a paper on creating an interview protocol for understanding engineering as a career choice by Carrico et al. (2013). Using what I learned from their research I worked together with Dr. Betz and Dr. Dringenberg to brainstorm questions to ask the students. Then, I conducted six practice interviews. The participants of these interviews were one professor, two graduate students, and three undergraduate students; four were women and two were men; and one majored in Materials Science and Engineering while the rest were in Mechanical Engineering. While doing so, we revised several of the interview questions.

Another reason I practiced interviewing my coresearchers and lab mates was to learn how to give an interview. Dr. Betz, Dr. Dringenberg, and I listened to recordings of the interviews to identify what I did well and where I needed to improve. For example, I needed to learn to identify times when I should press for more information or clarification. In particular, as an interviewer I needed to learn to be an “impartial ally.” I needed to be impartial enough not to lead them into saying something because they thought it was the answer I wanted, and I needed to be someone who would not pass judgement on them. I also needed to be their ally so that they would feel comfortable confiding in me. The most prominent means by which I accomplished this was giving neutral affirmations as they spoke, such as “yeah” or “okay,” and avoiding words like “good” or “bad.” These affirmations did not tell them what I thought about their responses to my questions but showed them that I was listening and prompted them to continue talking.

Once I had an initial protocol, I needed a method of recording the interviews. I used a Livescribe Echo Smartpen which, when coupled with a Livescribe notebook, would record the

interview as well as any notes I made while it was recording. Once I had the pen, I practiced recording a conversation to make sure I knew how to use it effectively.

## **Chapter 2.2 – Soliciting Participants**

Now that I had the means of giving an interview, I needed to do some interviews with students to refine it. In order to do that, I needed to solicit student participation. I made a survey in Qualtrics, showed the survey to Dr. Betz, and with her input I revised the questions. The survey contained questions on demographics, contact information, consent to be contacted for an interview, and four questions to gauge the students' mindset shown in Table 2.1. When conducting my final interviews, I made a separate but identical survey.

**Table 2.1. Mindset Questions**

You have a certain amount of intelligence, and you can't really do much to change it
Your intelligence is something about you that you can't change very much
To be honest, you can't really change how intelligent you are
You can learn new things, but you can't really change your basic intelligence

Next, I contacted a few teachers in order to attend the first few minutes of their classes, briefly explain my research, and hand out a QR code that would lead to my survey. I solicited students for my final interviews in the same way. Classes included Introduction to Mechanical Engineering taught by Dr. Spaulding, Introduction to Manufacturing Processes and Systems taught by Dr. Zhang, Manufacturing Systems Design and Analysis taught by Dr. Rys, Interdisciplinary Industrial Design Projects I taught by Dr. Leseman, and Heat Transfer taught by Dr. Betz. I then reached out to the departmental administrative offices in the various facets of engineering, including Computer Science and Industrial Engineering, to send emails to the students in my desired groups (Freshmen and Seniors). I also contacted some campus affiliated

engineering groups such as an engineering sorority. Several students asked for my permission to hand the survey out to their friends as well. To encourage participation, students that participated in an interview were promised twenty-five dollars.

### **Chapter 2.3 – Selecting Participants**

For my initial interviews, my first priority in selecting participants was a varied mindset. Selecting all the students from one end or the other of the mindset spectrum was less likely to give helpful feedback on the protocol than selecting from both ends as well as the middle. The second priority was their year in school. It was not within the scope of this project to do a true longitudinal study, i.e., select a group of first year students and continue observing them all through their undergraduate years in engineering. Instead, I selected students in their Freshmen and Senior years in order to conduct a quasi-longitudinal study. I did my best to have equal numbers of Freshmen and Senior students. My third priority was on gender. For the sake of revising the protocol, I selected as close to equal numbers of men and women as I could to eliminate gender bias as much as possible. I also selected one foreign student.

For the final interviews, I placed equal priority on variety of mindset and year in school. I ended up with two more Freshmen than Seniors; I often had more trouble recruiting students in their final year as they seemed to have a heavier workload from their classes. My next priority was an attempt to match school demographics as shown in Table 2.2. I was able to approximately match the College of Engineering with regards to ethnicity and race. My sample pool ended up with a higher percentage of women than in the College for two reasons: an engineering sorority was one of the most responsive groups I solicited participants from, and studies of this nature often underrepresent women, so I chose to allow this demographic to be skewed. There was also one participant who did not identify as a man or a woman, one foreign

student, and one student who is now a citizen of the United States but originally came from overseas. I had over one hundred and fifty responses to the survey, but I did not always get responses to emails I sent out to prospective interviewees.

**Table 2.2. Demographics Chosen for Final Interviews and Demographics of College of Engineering**

	Selected:	% Selected:	Undergraduate Engineering Population of Fall 2020 (%) (Fact Book):
Men	13	65	
Women	6	30	17.1
Other	1	5	
Born US Citizen	18	90	
Naturalized US Citizen	1	5	
Not a US Citizen	1	5	3.8
White	17	85	86.6
Not White	3	15	13.4

## Chapter 2.4 – Revising the Protocol

To revise the protocol, I selected four to five students, conducted interviews, then revised the protocol. After the first set of interviews, I met with Dr. Betz, Dr. Dringenberg, Amy Kramer, and Carter Morris to collaborate on revisions. After the second and third sets I met with only Dr. Betz. The entire group met again after the fourth set of interviews, and after the fifth the protocol was deemed satisfactory. These protocols can be found in appendix B. While revising the protocol, I discovered that intelligence is a subject that people generally dislike talking about openly, and I had to guide them more indirectly into talking about it. An example of this is the question, “on a scale of one to ten, how intelligent do you think you are?” Every student answered either six or seven. This is a known phenomenon: when asked to rate themselves against the general populace, most people place themselves slightly above average (Kruger and Dunning, 1999). This question was among the first to be omitted. Other questions were added or reworded. For example, we identified more effective ways to phrase things, such as using “you

didn't feel like you succeeded" instead of "you failed to succeed" when asking the students about a hypothetical test score. When I used the word "failed," they jumped to the conclusion that I meant they had a failing grade. When I spoke instead of their feelings, they were required to define themselves what lack of success meant. When adding new questions, some came from brainstorming with Dr. Betz and Dr. Dringenberg. Others, such as a question regarding comparing learning and grades as motivation to study, would occur to me during an interview. These "spur of the moment" questions were likely elicited by talking to the participants.

As the protocol was revised, a number of observations came to light that helped to refine the questions asked, but also provided useful insight later when analyzing the transcripts. The students often contradicted themselves; it was common for the interviewees to say things in response to later questions, especially with regards to intelligence or effort, that contradicted what they had told me when they were first asked to tell me about themselves. Another common contradiction was to tell me they did not care about the opinions of peers or professors, but later to say they did care. Many had not thought about these topics before, and several told me this explicitly either during or at the end of their interviews. Regardless of what the students claimed to be most motivated by, they had strong reactions to any questions or prompts involving grades. When I asked the students about their motivations between learning and grades, phrasing the question as a pie chart was helpful. Rather than forcing the students to choose between the two motivators, they could instead tell me how strong the imbalance was between them. A few also added their own motivators to the chart. When I asked about challenging situations students tend to discuss hypothetical students instead of themselves, so I needed to word the questions to be more specifically about them. Intelligence and smartness are a taboo subject, and the students needed to be "guided" into giving informative answers. I also often needed to ask specific

follow-up questions such as, “What do you mean by smart, intelligence, studying, or effort.” Effort and intelligence are tied to engineering identity. This has been examined in previously existing literature (Dringenberg et al., 2019, Leslie et al., 2015).

## **Chapter 2.5 – Giving the Interviews**

At the beginning of each interview the students would be asked to sign an Informed Consent Form, found in appendix C. I then asked the students to give me a pseudonym to use instead of their name. During the initial interviews, I allowed them to pick any name they liked. In the final interviews, I would prompt them with a first letter when asking them to choose a pseudonym, each receiving the next letter of the alphabet. Next, I would inform the students what to expect from the interview, give them a chance to ask questions, start the recording, and then briefly outline the purpose of the research. The script for this information is found at the beginning of the interview protocols in appendix B. I would then read through the list of questions, giving the students time to think, asking for clarification, and clarifying my queries as necessary. At the end of the interview, I would again prompt them for questions, ask if they were interested in being contacted again for further participation, and ask for feedback to improve the experience of future participants. Finally, they would be given the promised twenty-five dollars and asked to sign the human subjects log, found in appendix D.

During the earliest interviews, I took extensive notes on the students’ responses. While I did not attempt to record their answers verbatim, I tried to write down a shortened version of them that could be filled in easily by listening to the recording. In later interviews, I took notes only on things that stood out to me or that I wanted to return to later. Instead, I did my best to take note of their demeanor, whether they were laughing, embarrassed, amused, and so forth. I also started taking notes following the interview on the general impressions I had during the

interview; whether they came across as more fixed or more growth mindset, whether or not they seemed to be socially awkward, and any particular topics that seemed important to them. Making this type of notes post-interview was challenging because I felt it was best to do so where they could not see, as they sometimes would look to see what I was writing.

I also discovered that I have some traits that affected the interview process; in particular, I have Asperger's Syndrome. In some ways this is beneficial: I am not completely socially inept, but often people have the sense that I am somehow a little unusual. This, as well as my conscious effort to give them not-quite-responses to prompt them to continue, had the effect of simultaneously putting the participants at ease yet making them slightly uncomfortable. As a result, the students would feel comfortable enough to start talking openly but then their mild discomfort prompted them to keep talking more and more. However, it can have drawbacks as well. I sometimes struggled to read their facial expressions and may have sometimes missed hints at something the participants may have been saying without realizing.

## **Chapter 2.6 – Transcribing the Interviews**

I transcribed the first three interviews myself, but it was a time consuming and difficult process. Often the voices would drop in volume, speak over each other, fail to enunciate, or say something that did not make sense, making it a challenge to figure out what was said. Another student, Dong Ren, was hired to transcribe the remaining initial interviews and the first four of the final interviews. For the sake of time, however, it was deemed more prudent to pay for a professional transcribing service, rev.com, for the rest. With every transcript, I listened to the recording while reviewing the transcript and correcting any errors as I found. Once corrected, I would then go through the transcript and search for information that could possibly be used to identify the students. Teachers' names, hometowns, specific classes, high schools, friends'



names, and the like were edited out. While I could only share the raw transcripts with an individual on the project who took IRB training, the anonymized transcripts could be shared freely.

## **Chapter 2.7 – Final Interviews**

The final interviews had twenty participants. This allowed us to get a sufficient sampling of freshmen and seniors while mirroring the College of Engineering. Interviews lasted anywhere from forty-five minutes to two hours, most of them roughly an hour and a half. This resulted in 853 pages of data.

## **Chapter 3 - Coding**

### **Chapter 3.1 – Attitude, Value, and Belief Coding**

When I had all the transcripts completed and anonymized so that I could share them with others, I began coding them. Coding is a process used to analyze qualitative data. The codes are words or short phrases assigned to portions of the data with the intention of capturing or summarizing the essence of the datum each is assigned to. In this case, the data are quotes from the transcripts. These codes are the foundation of organizing the data, seeking patterns, and other analytic processes (Saldaña, 2016).

I started with Attitude, Value, and Belief coding as described in *The Coding Manual for Qualitative Researchers* by Saldaña (2016). In this system of coding, an Attitude is “the way we think and feel about ourselves, another person, thing, or idea.” A Value is the importance we give things, the “principles, moral codes, and situational norms people live by.” Lastly, Beliefs are our “interpretive perceptions of the social world,” a complex system encompassing attitudes, values, opinions, and experiences that drives our actions.

I started by choosing three transcripts: Alice, Ivan, and Janice, as they had been three interviews that stood out to me. On the surface level they appeared to range across the Mindset Spectrum and among the interviewees, their personalities were three of the most memorable.

Before coding these transcripts, I formatted them so that there were line numbers on the left and blank space to write on the right and printed them off. Then I read through them while highlighting Attitudes, Values, and Beliefs, each a different color. As I did so, I made notes on the blank space to the right. I paid extra attention to anything that sounded directly related to Mindset, contradicted anything the student had said elsewhere, or sounded like it was in agreement or disagreement with something another student had said.

Afterwards I met with Dr. Betz, Dr. Dringenberg, and Carter Morris. They had gone through the same process with the same transcripts. We compared our findings in order to be thorough, to avoid bias, and to gain insight from each other as we learned how to code qualitative data.

### **Chapter 3.2 – Coding with Ohio State University**

After becoming more accustomed to the coding process, I traveled to OSU for a week to work with Amy Kramer on how to create a codebook.

We began with the process of Attitude, Value, and Belief coding as described above. After doing this with the Alice and Janice transcripts, we created an excel sheet. The sheet had columns for transcript, line number, a short description of the quote, first round code, second round code, Attitude, Value, and Belief code, notes, aspect of Mindset framework (if it was directly tied), a second link to Mindset, inclusion criteria, exclusion criteria, and example.

We listed the Alice and Janice quotes we had highlighted into the sheet, including transcript, line number, and a summary. Next, we labelled the quotes with whether we thought they were Attitudes, Values, Beliefs, or some combination. Then we made notes on what we thought was most important about the quotes we had selected, our interpretations of what the quotes might mean, how relevant we thought they were, and any other quotes that the quote might be related to.

In the end, I did not proceed further with this codebook. I found it to be overwhelming without offering much meaningful insight. The amount of information involved made it difficult to sort through even within a single transcript. However, as I built this prototype codebook, I noticed three major themes that promised to be particularly important: Judgement, Effort, and Motivation. Next I proceeded to shift my focus to these themes using the process of open coding.

Open coding does not use any previously defined categories. Instead, the researcher takes the raw data and sorts it into broad categories that are determined by the data itself (Mills et al., 2012).

## Chapter 4 - Results and Discussion

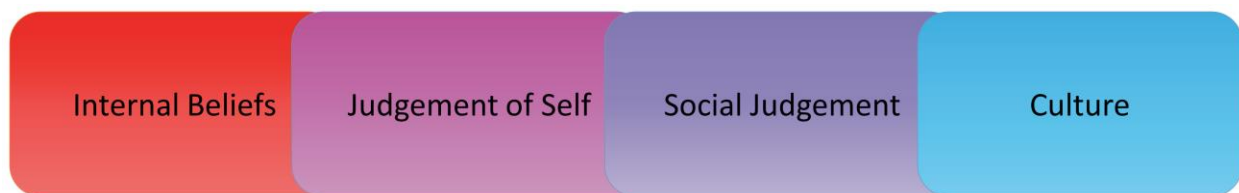
I discovered that the reason the Mindset framework as well as the Attitude, Value, and Belief coding process were insufficient for coding my data was because they were focused on the beliefs of the individual. As discussed by Dringenberg et al. (2019), a more complete understanding of the students' beliefs also requires an examination of the culture around them and their perceptions of it. To accomplish this, I started over the process of coding the transcripts. This time I used open coding, or coding with no predefined terms or categories, but rather the ones I myself had found (Mills et al., 2012).

As I looked through the prototype codebook, I realized that the quotes most relevant to Mindset and the question of how they viewed their own intelligence fit into three basic categories, or themes: Judgement, Motivation, and Effort.

During the process of coding with these themes, I went through each transcript and copied quotes that fit into one or more themes into another document. After pulling quotes from all of the transcripts I sorted them into documents for Judgement, Effort, Motivation, and the combinations that could be derived from them. Finally, I sorted the quotes into categories within the themes. Judgement was sorted into judgement of self, judgement of others, judgement from others, and intersections between the above subcategories. Effort was sorted into one's own effort and other people's effort, and within those into positively viewed effort, negatively viewed effort, views of effort dependent on efficiency, and views of effort depending on gaining something from it. Motivation was divided into intrinsic, extrinsic, simultaneous intrinsic and extrinsic motivation, and quotes that talked about both types of motivation but did not apply them simultaneously. In all three themes, there was also a category for quotes that did not quite fit into the other categories.

When I sorted the quotes I had selected related to Judgement, Effort, and Motivation, I had a total of 211 quotes in Judgement; 68 quotes in Effort; 66 quotes in Motivation; 37 quotes in Judgement and Motivation; 112 quotes in Judgement and Effort; 43 quotes in Effort and Motivation; and 17 quotes in Judgement, Effort, and Motivation. Quotes in intersecting categories were not double counted.

In particular, the theme of Judgement served to provide a link between the between an individual's internal beliefs and the culture they reside in. This is illustrated in Figure 4.1.



**Figure 4.1 The Relationship between Individual and Cultural Beliefs with Judgement as a Link**

Students did not necessarily have the same impressions of engineering culture around them. For example, when asked about whether they were willing to share their grades after a test, most of the students said they would not mind revealing their scores if they were asked, especially if they did well. In addition, some also viewed it as an opportunity to learn from their mistakes while the test was still fresh in their minds. Not all students were comfortable with sharing, however. Two students in particular said this about sharing scores after the test:

*“Kind of a standard, you know, uh, after the test, oh, you know ... ‘Did you understand this problem?’ Or whatever.” – Ivan*

*“I judge them because I’m like that’s really annoying that, I guess like if people like ask you what you do, like, ‘Hey, how did you do on the test?’ And if they’re asking you, and they*

*already did well, then it's like they're just trying to brag about how they did well, I don't know, that's just how it works in my mind.” – Janice*

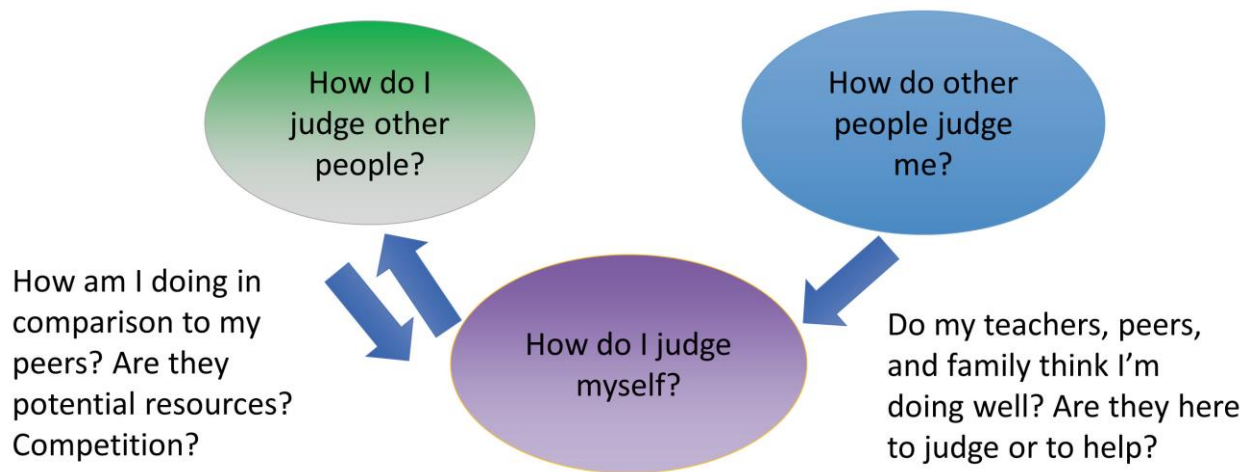
These viewpoints show just how varied the approach to a common situation can be: a normal interaction, or an unwelcomed opportunity to boast. My themes of Judgement, Motivation, and Effort helped to bridge the gap between the individual and the social elements, Judgement especially.

### **Chapter 4.1 – Judgement**

The first category I discovered when I began open coding was assessment of individuals. The students frequently spoke of the assessments they felt they received from others and how it affected them. Though they would often say they tried not to judge the students around them, they would still find themselves using comparisons to those other students to measure themselves. Most importantly, they often talked about how they felt about themselves. I decided to call this theme Judgement.

An important observation that the Judgement theme brought to light was the concept of self-worth. I consider self-worth to be the result of the cumulative judgements the students make of themselves and the feelings that stem from them. Self-worth is incredibly important to an individual's success, especially in the wake of a failure; it is a major determining factor in the individual's response to that failure. An individual who has a higher sense of self-worth is more likely to take corrective actions. An individual with a lower sense of self-worth, by contrast, is more likely to engage in maladaptive behaviors or give up on an endeavor entirely (Dweck, 2006; Huff et al., 2020).

Judgement is comprised of three overlapping sub-themes: Judgement of Self, Judgement of Others, and Judgement from Others. The way these sub-themes interact with each other is shown in Figure 4.2.



**Figure 4.2 Interactions within Judgement**

Judgement of Self could be thought of as the myriad judgements that cumulatively make up the students' self-worth. Students often judged themselves without any conscious relation to judgements of or from others, such as by their grade-point average (GPA) or by their choices. For example, as a reaction to a poor test grade:

*"I'd beat myself up about it. I'd be upset. I'd probably be full of regret, first off. I'd be like, 'Why'd you do this last night instead of studying?'" – Nest*

They also often judged themselves in comparison to other people, such as comparing their grades to the class average, and most felt pleased at the thought of outperforming their peers. Their judgements of themselves also factored into their judgements of others, especially by causing them to be forgiving because they recognized that they were imperfect. This has been examined in previously existing literature (Alicke et al., 1997).



The judgements passed by others has a profound effect on the students' judgements of themselves as well. It is worth noting that what is important is not necessarily the true opinion an outsider holds of an individual, but what that individual perceives that opinion to be. Most would admit that their peers' or professors' opinions of them mattered, especially when it came to whether or not they were smart. Some even feared that their teachers were less likely give them help if they were judged unfavorably.

*"I wouldn't want them to like clunk or like give up on me, like and I'm still coming in for help, and wanting help, I wouldn't want them to like think that I was just not smart, she won't understand anyway." – Janice*

*"People will have more respect for you if they think you're intelligent and that can help you throughout life. Um, teachers, they'll treat you better." – T*

Several claimed not to be affected by the judgements of peers or professors, but they all spoke of someone else's judgement being important to them, such as a parent, a boss, or a sports coach. Some even tried to deny to themselves that they cared about a source of outside judgement, especially their teachers. When I asked if they cared whether their professors thought they were smart, multiple students would try to deflect the question. Several tried to ask if they could answer about a quality other than smart such as hardworking. Others denied caring and expressed the same sentiment as the quote below:

*"'Cause they grade me the same whether I'm dumb or smart. All I have to do is show it on paper that I'm smart. If they- if they see that I got a 90 on the test and then they think that I'm dumb, well, I don't really care. I got a 90. It's- it's objective." – Geoffrey*

I interpreted this to mean that his teachers' judgements do matter to him, but he tells himself the professors have proof of him being smart in order to deny to himself that he cares.

Together with the students who tried to change the subject, I concluded that these students were likely self-conscious about whether their teachers think they are smart but try to avoid admitting it to themselves.

### **Chapter 4.1.1 – Social Judgement in Undergraduate Engineering Culture**

A special case of the interaction within the Judgement theme is social judgement within engineering, especially in relation to intelligence or smartness. The students all felt pressure to live up to what they perceived to be the standards for being an engineer and to fit into engineering culture. Some managed to work well under this pressure, but others found it to be a significant source of stress. When an individual receives feedback, real or imagined, that tells them they are not performing as well as they had believed they were, the result can be the lowering of their self-worth (Huff et al., 2021).

Students felt that they received judgement from many sources: teachers, parents, potential employers, and other students. Sometimes that judgement could be helpful, but other times it could become a source of stress. Several expressed the same belief as the following quote:

*“I feel like when people don't think that you're intelligent that they maybe don't listen to your opinions as much, and don't let you help, help out on activities, which kind of closes off a door for you to succeed, and you to help other people succeed, so I definitely think it's important. And I do worry, actually, that people don't find me intelligent, 'cause I know my um, vocabulary is not that high. Like, everyday conversation, um, so yeah, yeah, I do think it's very important.” – Hayleigh*

In this instance, Hayleigh was talking about how she wanted to be seen by her peers, but the same held true for other sources of judgement. When asked whether she cared about her professors' opinions of her, she even tried to avoid answering the question by insisting that her

grades should prove to them that she is smart. Janice also tried to deny caring for the same reason, but later admitted to worrying that if her teachers did not think she was smart they might give up on her and refuse to help her if she asked. However, some students would claim not to care about judgements from peers or teachers, or to only care about a teacher's opinion in a small classroom. Some, like Oscar, thought judgment from their teachers was a good thing.

*"I guess professors, like, they're sorta, like, in a unique position to, um, judge and then fix."* – Oscar

Oscar went on to tell me that they felt a teacher was more likely to be impressed by seeing improvement in a student than a student who does well from the beginning. Some students even felt empathy with their teachers and used it as a positive source of motivation.

*"I know that professors, or a lot of professors, put a lot of work into their classes and it's, I know that if I was sitting up there, or if I was standing up in front of that lecture every day and was staring back at 25 kids not paying attention, taking a nap, on their phones, that would bug the crap out of me. So I want them to recognize that I'm hearing what they're saying and I'm engaged."* – Steve

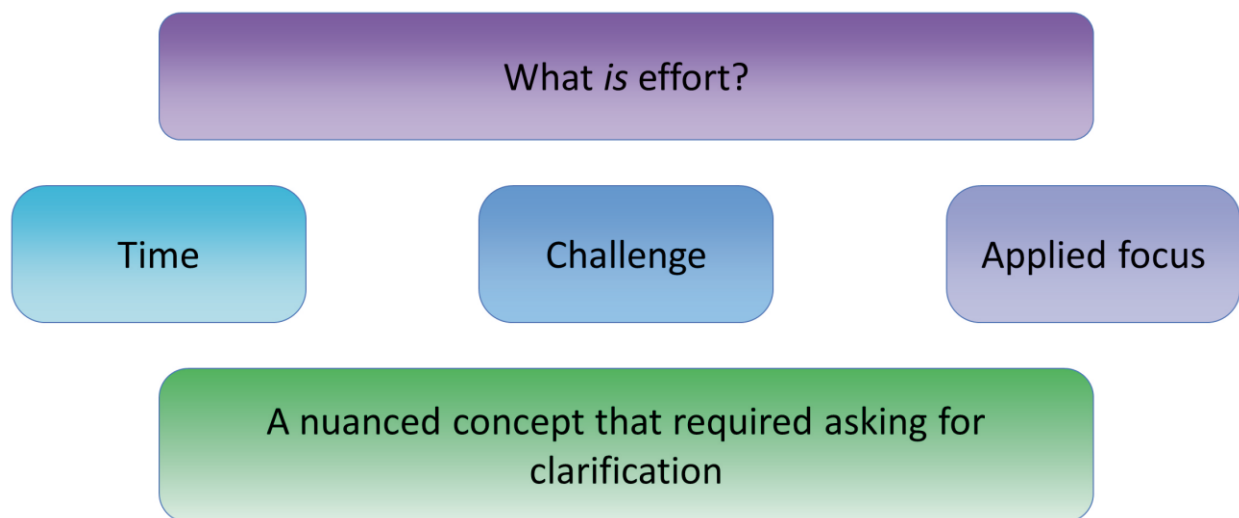
This shows that although this judgement can be a significant source of stress, it is possible to make it into a positive and motivating force.

## **Chapter 4.2 – Effort**

The second theme was easily named Effort. It is worth noting that my theme of Effort differs from the Mindset approach to effort. Under Mindset, effort is struggling through something difficult. The framework examines an individual's beliefs about whether effort is a means of growth or proof that the individual is not smart to determine whether the individual is at least currently in a growth or fixed state of mind. While those attitudes are an element in my

theme, Effort also includes nuances such as what an individual thinks effort is, their attitudes towards effort within different contexts, and the perceived societal expectations of how much effort is the correct amount.

Most of the students who were interviewed spoke of effort as though it was synonymous with the amount of time spent on something. While the difficulty of a task was often factored in, it did not completely replace the association with time spent. One student during the initial interviews to revise the protocol, however, said that it was not just a matter of time spent on something, but that the degree to which he was focused on his task was a deciding factor in how much effort he thought he put towards things. As shown in Figure 4.3, the meaning of effort was not always straightforward, though it was consistently important.



**Figure 4.3 Defining Effort**

While the definition of effort seemed to constantly change, the following generalization emerged. If a student was talking about effort in the context of their ideal way to study, in particular the environment they studied in, they were typically talking about applied focus.

Examples include working together with classmates, seeking solitude, or removing distractions. If a student was recalling an experience they had struggled with, they would often define the effort as struggling with a challenge but measure the difficulty of that challenge by how much time they spent on it. When the students spoke of effort without mentioning or being guided to studying habits or challenging situations, they almost always spoke of effort as the amount of time spent on something.

Students frequently had different reactions to effort that produced desirable results versus effort that did not. When students were asked to relate an experience where they succeeded after having to work very hard at something, many expressed feeling annoyed by the difficulty at the time, but in hindsight they consistently reflected positively on the experiences. However, when their effort was not met with success, they were usually disappointed. Sometimes they were able to think positively on their spent effort, often by considering it a learning experience or reminding themselves that they would have regretted not trying. Most, however, considered it a wasted effort, as shown in the following quotes:

*“I think if something's challenging, that means like, I'm interested in it, and I'm putting in a lot of time and effort, and I want to see that pay off. Um, if something's challenging, and I'm putting all this time and effort, and I'm still failing, then like, I'd feel really disappointed. And I'd feel like I'd just wasted a lot of time on whatever it was.” – Kathleen*

*“It kind of seemed pointless if I didn't get like this amazing outcome that I was expecting to.” – Janice*

To put the latter quote in context, Janice shared an experience where she dedicated herself to running during the summer as practice for her high school track team. Despite doing well at the state competition and beating her personal record, she still felt dissatisfied with the

results. Her disappointment led her to decide she would never be an “amazing runner.”

Afterwards, she felt her dedication had been wasted and decreased the amount of time she spent on running. Compared to other students, Janice was unusually honest with herself and blunt.

While most other students did not express their thoughts as succinctly, they frequently spoke of effort that did not result in their desired outcomes as “annoying,” “irritating,” “it sucked,” “frustrating,” and similar descriptors.

They also spoke of conflicting feelings about endeavors that required large amounts of effort and endeavors that required very little. Some students felt that in order to be worthwhile, a class should require its students to work hard. A class that required little to no effort had little to teach them and they would have preferred not to have had to take the class at all. Quinton referred to an easy class he had taken as “a joke,” and said the following about classes in general:

*“I felt that I learned more in classes I get poorer grades in because I had to struggle a lot more. Classes I get an A in, I usually didn't put that much effort into it, and it just, it wasn't hard for me for some reason. And so I didn't, and as a result of that, I don't work as hard and I don't learn as much, I think.” – Quinton*

Other students expressed more positive feelings about classes that required less effort than those that required more. Perhaps because of the tendency to define effort as time, the reasoning they gave was typically time related: classes that required a lot of effort meant less free time, and classes that required little effort meant more time to spend on their harder classes. Although some of these students also agreed that they were likely to learn more in a class requiring more effort or time, others expressed the following:

*“I wouldn’t say there’s anything conclusive that, shows one way or the other, spend a lot of time and learning more versus not spending time and not learning more.” – Doctor Manhattan*

Similarly, the students often expressed strong feelings about how and where they spent their time. Several expressed that the most important quality an engineer could have was not intelligence but time management.

One student in particular, Mary, had especially strong feelings regarding time management. When she talked about her classwork, time came up frequently. An easier class meant more time to spend on a harder one. Being a good student meant spending the amount of time needed on classes, not more or less. She spoke of the importance of time management frequently, even claiming,

*“It relies on your time management skills to be smart.” – Mary*

She admitted that she was working more than she should; she had three jobs year-round and a fourth in the fall, and she stated,

*“I like to work a lot just to fill that extra time when I could be studying.” – Mary*

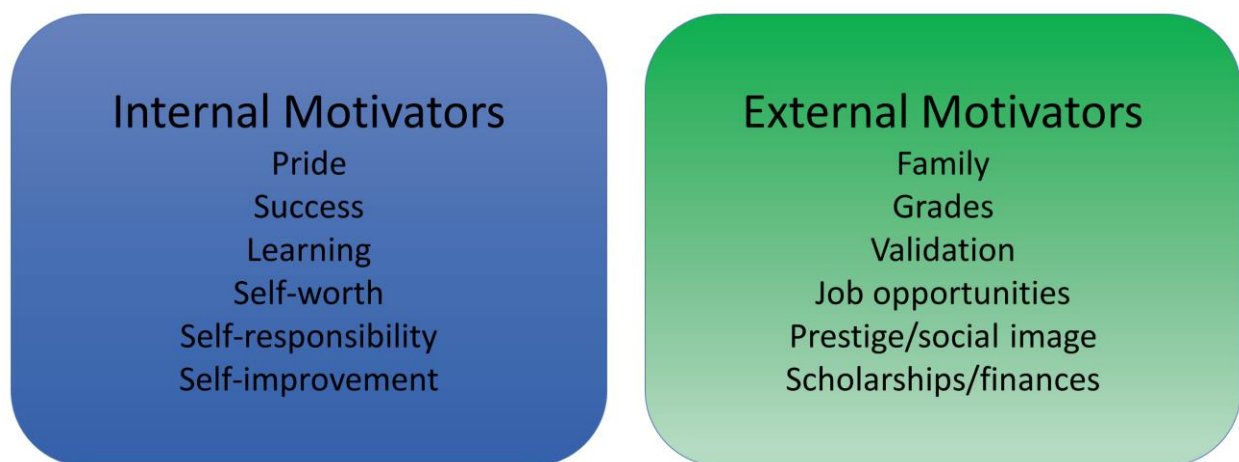
She also said that her grades had gone down when she began working more. After reading through her transcript several times, I suspect that she was using her work as a preemptive excuse. If she is always working and having to squeeze time in to study, she can blame any bad grades on her busy schedule; without that busy schedule, she would have to admit to herself that she had made a choice not to study, or worse, find herself faced with the notion that perhaps a bad grade was the true extent of her capability.

Overall, when the students spoke of time management, it sounded like they were only partially talking about time management as simply making sure they had a healthy schedule with

time to meet all of their needs. They gave the impression that they were trying to simultaneously deny and express the idea that there is a certain range of effort that is required and acceptable for an engineer. Engineering is hard; a certain amount of effort is needed, or you are lazy and just will not make it. But engineering requires you to be smart, too; put forth more than that range, and it means you must not be cut out to be an engineer.

### **Chapter 4.3 – Motivation**

The final category was Motivation. Motivation is the underlying factors that cause an individual to do something. In this research, Motivation could refer to why students do anything discussed in the interview, but it particularly refers to why they chose to go to school for engineering and how they motivate themselves to study their classes. It is difficult to discuss Motivation without discussing Effort, as Motivation is why someone puts forth effort. Students could be motivated by intrinsic factors or intrinsic factors, which has been studied in previously existing literature (Vallerand et al., 1992). Most of the time they were motivated by several motivators at once, both extrinsic and intrinsic. Examples of intrinsic and extrinsic motivators are illustrated in Figure 4.4.



**Figure 4.4 Internal and External Motivators**



Intrinsic factors can include feelings of success, goal fulfillment, pride, self-improvement, self-worth, enjoyment, and learning. When students spoke of these internal motivators, they sounded invested in what they were doing. One student made a statement that could be said to summarize the relationship between this investment and intrinsic motivation:

*“I think that in order for you to succeed in anything that you are doing in your life, not matter if it was like, work related or school related or like, social life related, you have to be actual... you have to set a goal and then desire your goal. So, I feel like desire is basically the main element that you can actually build anything, any... any concept of success off, basically.”*

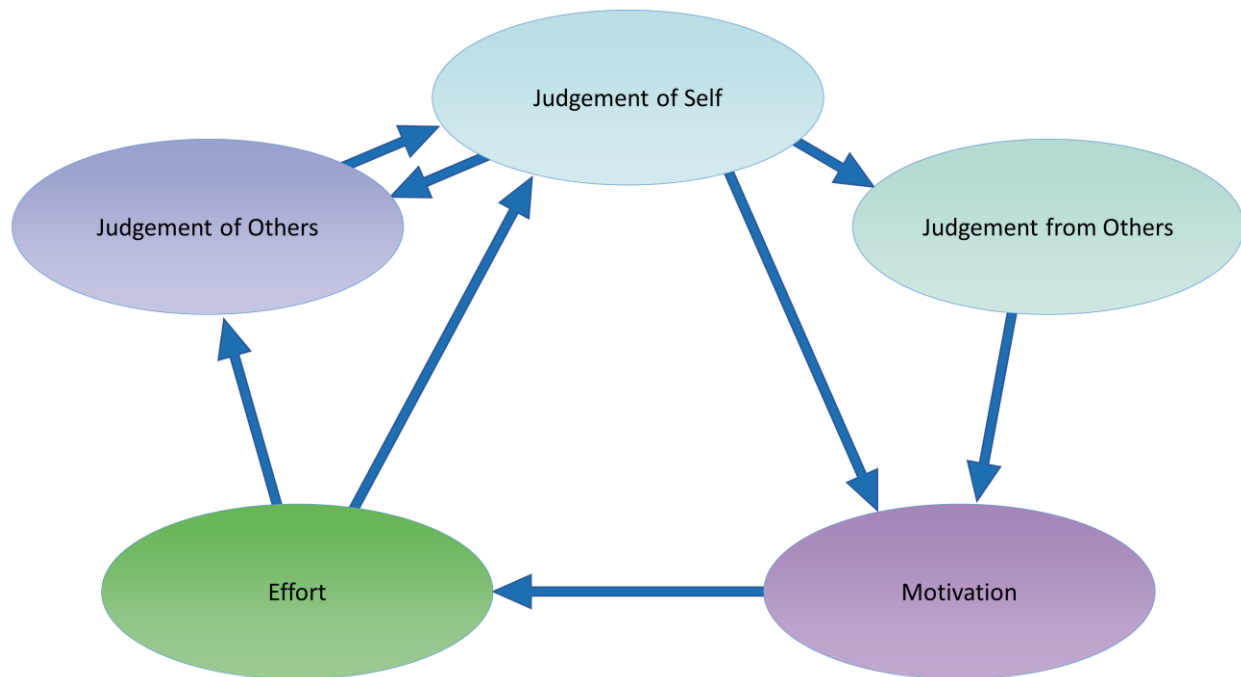
– Peter

In short, to be intrinsically motivated is to want something for one’s own sake. This was especially evident when students spoke of being motivated by enjoyment or learning, which loosely correlate to intrinsic motivation to know and intrinsic motivation to experience stimulation as discussed by Vallerand et al. (1992).

Extrinsic factors include grades, validation, scholarships and finances, job opportunities, and prestige or social image. Two of the most prominent extrinsic motivators were grades and finances. Students felt pressure to keep their grades high because they influenced their ability to keep scholarships and potential job opportunities, and one of the most common motivators the students spoke of for becoming an engineer was the expected salary. Grades were important in other ways as well. Grades and Motivation will be discussed further in relation to Judgement and Effort.

## Chapter 4.4 – Intersections within Judgement, Effort, and Motivation

Judgement, Effort, and Motivation are not cleanly separated. It is easy to imagine a link between Motivation and Effort – motivations are *why* a student puts forth effort. A student might feel judged by, judge others for, or judge themselves based on efforts. They may do the same when it comes to their motivations, or both at once. Figure 4.5 illustrates the paths connecting the three themes, which are discussed in further detail below.



**Figure 4.5 An Illustration of the Relations within Judgement, Effort, and Motivation**

### Chapter 4.4.1 – Intersection between Judgement and Effort

When students put forth effort, the results of that effort affected the way they judged themselves and others. A common example was their responses to grades, both their own grades and those of their classmates.

I asked the students to talk to me about hypothetical test results in a situation where they felt they had succeeded. All the students reported positive feelings about doing well on an exam, and many felt that their feelings stemmed from the effort they had put into it.

*“Because like, my hard work paid off. Like, I... I really like it when... when that happens.” – Peter*

Rather than telling them what grades they received, I asked them to define success for me. Students typically gave one of three answers, all related to the grade they received. The first answer falls into Judgement of Self: their grade on its own. Two students considered a success to be a minimum of ninety-five percent, the rest would have been happy with an A, and many would have been satisfied with a B. Some also said that they would go to take the test with an expected grade, and as long as they met or exceeded that expectation, they were successful. The second answer falls into the intersection between Judgement of Self and Judgement of Others: they were satisfied as long as their grade was above the class average. Others, however, took their effort into account:

*“If it's an easier class, then an A would be success. If it's one of the more difficult engineering classes, I would say like a B would be a success, and C would be, like, it's okay.” – Edoras*

*“I usually associate what grade I should get based on the time I put into it. So if I put a lot of time into something and I get a great grade on it, then that was like to go one on one. If I put like, you know, a little bit of time, like an hour in, and I end up getting a C or a D, I can't be that disappointed because I didn't put too much time into it, that I obviously didn't care about it too much.” – Robert*

When I later asked them about a test where they did not feel successful, they would judge themselves negatively and experience guilt or shame (Huff et al., 2020). After their initial reactions, many students would look at the problems they did wrong, seeking to correct any misunderstandings that might affect their future success in the class. Some also described changes they would make in their lives to increase the amount of time they had to study. Others, however, would dwell upon their lack of success. Some would even decide that they were not capable of doing better. Others would look for excuses to explain these grades, such as varying test versions, the competency of the teacher, the structure of the class, and their busy lives in order to protect themselves from negative self judgement. Effort was frequently a factor in the strength of their disappointment, as well as how likely they were to try and improve on their future test scores.

*“My reaction would depend on how much effort I put into it, how much I studied beforehand, if I was slacking off the whole semester or prior to the test then I wouldn’t be as surprised, ‘cause I would have expected that and vice versa, if I had worked hard be very disappointed.” – Cylo Ren*

*“If I really felt like I studied my hardest on a test, I- I did that, and I didn’t do well on the test? Then I guess I’d, I mean, I’d still be disappointed in myself. Um, probably face the hard truth, I guess, at that point. If I’m trying to get an A in the class, and I just got a 70 on an exam that I tried my be hardest at, I’d, probably be like, ‘Well, don’t want to invest that much time in it. I’m probably gonna get a B in here, or maybe even a C, who knows. This information clearly isn’t clicking with me,’ so, I’d probably be less disappointed than the earlier scenario where I did know what I did wrong.” – Nest*

When I asked students about hypothetical tests in which they did well or poorly, I also asked them to compare themselves to another student: what if they did better than a student who they thought of as smarter than they were, or did not do as well as a student they thought they were smarter than? The students demonstrated the same behavior as the participants in Alicke's study on social comparison (1997). When speaking of outperforming the smarter student, they tended to make excuses. Perhaps the other student had not had as much time to study as usual. Perhaps there were two versions of the test, and one was easier than the other. As a rule, they were unwilling to reassess their classmate, but they felt positively about themselves for doing better. When asked about the student who was not as smart as they were but outperformed them, the students were more willing to reassess the classmate and claim to have underestimated them. However, many still fell back on excuses, mostly on not having enough time to study for that exam.

The concept of effort as time was important in how students judged themselves and each other. As discussed in chapter 4.2, the students equated the amount of time they spent studying for a test to the amount of effort spent on the test. That amount of time colored their feelings towards a success, and their feelings towards lack of success were even more strongly affected. When asked to compare themselves to others, the students frequently alluded to the amount of time they and their peers had been able to study to explain unexpected outperformances.

Effort was also important for how they judged their peers beyond a one-time event. For example, I would ask the participants about two students, both who were doing well, but one who studied constantly and one who seemed to find school effortless. The interviewees were asked to tell me how smart the two students were based on how much effort they were putting into their classes. Most of the responses were similar to this one:

*“He's [the effortless student] a genius I think, so. I definitely see that as smart but I don't see having to put a lot of effort as not being smart.” – Fritz*

They were unwilling to judge the hardworking student as not smart, but they believed the effortless student was smarter. However, some students, like Mary, criticized one or both of them as probably lacking in time management skills. She suspected that the hardworking student was not leaving themselves enough time for their interests, but that the effortless student, while having more time for other things, never had to learn time management because they had never had to struggle with it. She claimed that the definition of smart, to her, meant having time management skills.

In addition to Effort being a factor in Judgement of Self and Judgement of Others, it was also important to Judgement from Others. It was especially important in judgement from figures of authority, such as parents and teachers. While one student, Edoras, seemed to take pride in being lazy, most of the students expressed that they would want the people around them to see them as hardworking. One student cared even more about his professors recognizing his effort than thinking he was smart.

*“I don't care if they think I'm smart necessarily but I don't want them to think, oh that kid's lazy. He doesn't try.” – Steve*

The interactions between Effort and Judgement support the idea that the students perceive engineering as having a “correct” amount of effort. The student who finds school easy is smarter than the student who must work hard, and they all want to be perceived as smart. Too little effort, however, and they will be perceived as lazy.

### **Chapter 4.4.2 – Intersection between Judgement and Motivation**

Judgement was one of the most prominent factors in the students' motivations. Many internal motivators were closely tied with Judgement of Self and the concept of self-worth. The most evident of these were pride, self-responsibility, success, goal fulfillment, and self-improvement.

One way in which self-worth could be a motivator to students was the desire to live up to the image they held of themselves, especially in the motivators of pride and self-responsibility. Students did not always mention pride or responsibility by name, but it was common for these to be factors in students' decision making. I consider pride to be expectations students hold for themselves. It could be thought of as the students' judgement of their capabilities. Pride can drive students to seek a challenge such as choosing a harder class over an easier one:

*"I would always try to take the hardest classes possible, um, not always like because I wanted to take them, but because of my own pride." – Janice*

Rather than motivating students to decide to start something, responsibility was more likely to motivate them not to turn aside from a previously set goal. I define responsibility as a student recognizing how their actions and choices lead to different outcomes and consciously making choices for the sake of obtaining a desirable outcome. This can include guilt and attempts to take corrective actions but differs in that it also encompasses actions taken before a potentially negative outcome (Huff et al., 2020). An example of this is when a student chooses to study in hopes of getting a better grade on a test. It can also manifest in the form of being motivated to follow through on earlier decisions. Of all the students, Quinton stated this most plainly as one of his motivations for pursuing a degree in engineering:

*“I’m also motivated by the decision I made, I decided to come do Engineering.” –*

*Quinton*

In addition to being motivated to uphold their current levels of self-worth, the students were also motivated to build up their self-worth in the future. This could be found in the motivators of success, self-improvement, and goal fulfillment. Individuals can be motivated by feelings of success in order to fulfill a need to feel competent (Vallerand et al., 1992). Many of the students also spoke of desires to improve themselves, sometimes in the context of being a student, but most often when I asked about an experience where they received feedback that they had not performed to expectations. The students typically responded by describing feelings of guilt or shame, and most wanted to use the experiences to learn how to do better in the future. This has been examined in previous literature (Huff et al., 2020). When I asked about the students’ motivations to pursue an engineering degree, many had set goals for themselves that they felt a career in engineering could help them achieve, typically either goals for their own lifestyle or something they wanted to achieve in the workplace.

*“So I can live by myself. So I can have my own house. So I can be self-sustaining, pretty much is the number one thing.” – Nest*

*“I remember where I used to live, there used to be a huge dump over there like, there was a dumpster, but next to it was a dump, people just don’t aim right or something at the dumpster. I used to think like you know, how I can solve that problem, maybe make a more usable dumpster, more attractive one that you want to put your trash in, those little things. Just kind of the little things just kind of helping others have a better life.” – Cylo Ren*

Fulfillment of these goals would most likely elicit feelings of success, bolstering their self-worth.



Extrinsic motivators were also tied to Judgement. Judgement from Others was closely related to motivators such as grades, validation, job opportunities, and social image. These judgements could elicit strong feelings of anxiety from the students and often affected their Judgement of Self. An example of this influence on Judgement of Self is validation, which I define as positive feedback such as a good grade or a compliment that bolsters the recipient's self-worth.

Grades played a major role in the students' academic lives. They were a means by which the students could quantify a facet of the judgement they felt they received from their teachers. They were also a conduit for other external motivators such as validation, finances, job opportunities, and social image. They felt that their grades affected many other important things: the judgements of their teachers, peers, and family; their ability to find an internship or a job; their eligibility for scholarships and financial aid; and their judgements of themselves.

*"Grades have a huge determination on being able to get jobs right out of the gate." – Doctor Manhattan*

*"I personally think they kind of look at GPA first and foremost and if that's good then they'll go further but that's kind of their first thing they look at." – Fritz*

*"For internships it's huge. It's 3.0 or nothing." – Geoffrey*

*"I know if I don't have my scholarships I'm going to be like, way more stressed out about money, and I'm going to have spend time working, and getting a job, which means like, less time for studying, and like, getting good grades." – Kathleen*

*"I equate my grades so much to me as a person, um, like my self-worth, and all that, which is really bad, I know, but I just think if I get a bad grade, then that just m- makes me feel like I did like bad as a person." – Janice*

*“I think as engineering students, we kind of live and die by the curve.” – Ivan*

*“I think it reflects me as a student.” – Robert*

Grades also affected the students through Judgement of Others. Many of the students described themselves as competitive. Although they would also talk about competition in extracurricular activities such as sports, this competition was most evident in the form of test scores. Many defined success on a test as having a grade higher than the class average, and some felt the need to be better than the people around them.

*“I wanna be at least as smart or smarter, um, than, you know, the people around me.” – Robert*

*“I’m also like a really competitive person, so like that’s where like my own pride like comes in, it’s like I almost like want to be the best.” – Janice*

The students had a mix of attitudes towards grades. A few insisted that grades were an entirely objective means of gauging how well a student was doing in a class, and most felt that their grades were at least a good representation of how well they had learned the material. However, some did not feel that grades were necessarily an accurate measure.

*“Grades are as objective as possible at least in sciences like this.” – Ivan*

*“They’re a way for me to self-evaluate and figure out whether I’m one partially at least learning the material, and, two, whether I’m doing well in a class, which can be slightly different things.” – Leonardo*

*“It doesn’t necessarily mean that you have learned. I know a lot of people that get through without learning things, and sometimes I’ve done that.” – Edoras*

They also had conflicting attitudes towards a system based on grades. Some used their grades as a tool to motivate the learning process. Others felt that the need to worry about grades

was counterproductive to learning the material. This feeling typically stemmed from the relationship between grades and scholarships or job opportunities.

*“The motivation, the discipline to do that learning comes from wanting to get a good grade but the desire to learn, the desire to learn is there, the actual motivation to learn is the grades.” – Quinton*

*“If grades weren't a thing, and I didn't have to keep A's like from my scholarships and in the blue to go to college, uh, you know, obviously you won't have to worry about it, but then you can just like strive for understanding and not just understanding in general and uh, the specific test.” – T*

During the interviews I asked the students to give me values in percentages how much they were motivated to study by their grades and by their desires to learn. It is not possible to give an accurate average of these values: most students gave differing values for different classes; several students gave approximate rather than exact numbers for their pie charts; and some did not give numbers at all, either simply stating which was more important or being unable to separate the two motivators from each other. However, more than half of them typically felt that their grades were of greater importance to them than learning in most of their classes. It is worth noting that a couple students added their own motivators to the chart: one sought to fulfill his personal goals, and one allotted ten percent to the approval of others as shown below.

*“I think that's probably a combination of approval from friends and approval from family, um, as well as, uh, maybe like the community that I might get from being in that specific class.” – Leonardo*

When the students varied the amount of motivation between learning and grades for different classes, they considered learning to be of higher importance for one of three reasons. The first and most common was their level of interest in the subject matter. The second was expecting to take a second level class on the same topic later. The third was when they anticipated that the topics in the class would likely be of importance in their future careers.

Grades were not the only means by which Judgement from Others became a motivator for the students. Many felt a need to fulfill perceived expectations from others, especially parents. In some cases, these expectations could illicit significant anxiety from the students.

*“I just feel like I'd let my dad down if I quit now. Um, well, I mean I- I know for certain that he'd be let down.” – Geoffrey*

*“Sometimes I get scared that like my mom is gonna be mad at me, or be disappointed in me, or something like that, but literally she has never done anything to make me think that, and she tells me that every single time I call her.” – Janice*

However, if these expectations were felt to be unfair, they could cease to be motivating. Oscar mentioned several times a complicated relationship with their father. As a result, if they felt expectations placed on them were beyond what was fair, they felt rebellious rather than motivated.

*“I never felt, like, my father was ever proud of me ‘cause, like, I feel I guess I've seen, I present, like, my success to him and he'd say why isn't it better? And so, like, I'd be like, all right psh. Like, grades was, like, specifically, I'd get a 100% and, like, isn't it... why isn't it 102%?” – Oscar*

Analyzing the transcripts has led me to believe that Judgement from Others can subconsciously be a factor in why the students chose to pursue a degree in engineering.

Engineering is thought of as a field for smart people (Leslie et al., 2015). The students did not always consider the same sources of judgement to be important, but they all cared a great deal about what other people thought about them. Although no student straightforwardly listed being thought of as smart as one of their motivations to pursue engineering, some gave clues. Some of the most obvious clues were given when I asked the students whether they cared if their peers thought they were smart.

*"I guess. Kind of. But just by like, telling people you're an engineering student, people kind of assume you're smart." – Kathleen*

*"I feel like just the title of being in an engineering program kinda infers that you're smart." – Robert*

This was not the only factor the students had in choosing engineering. Other factors included enjoyment, family, and expected salary in their career. As a rule, in most situations the students had multiple motivators driving them. I only found two motivators in the students that were not necessarily linked to Judgement: enjoyment and learning. In academic situations, the students were always at least partially motivated by one of the various motivators that stem from Judgement. The interconnected nature of Judgement of Self, Judgement of Others, and Judgement from Others means that it would not be inaccurate to say that self-worth is, in most cases, the root of most of the students' motivations.

### **Chapter 4.4.3 – Intersection between Effort and Motivation**

It is easy to imagine the influence Motivation has on Effort: motivation is why an individual puts forth effort. Less obvious are the ways in which effort can affect a student's motivations. For example, effort can be its own motivator. Sometimes students were willing to

put effort into something with the hopes of not needing to put as much effort into it later. Within academics, this was most applicable to a student studying more early in a semester so that the final would not be as difficult or for a class on a subject they planned to take a more advanced course in later. In this case, the students were usually talking about effort in terms of time.

*“I try to shoot for above a 95% on my exams, so that way I don't have to go too hard on the finals.” – Nest*

Effort also has a relationship with the intrinsic motivator of enjoyment. Enjoyment was one of the most effective motivators, because students put effort into subjects they enjoyed more readily than subjects they did not. It was the most common reason given for any student being willing to put more than their perceived minimum amount of effort into a class. The students frequently added that enjoyment diminished the feeling of how much effort they put into something. In this context, effort was sometimes described as time, sometimes as a challenge, and it often seemed that the students meant both at once.

*“If I don't have the grade I want, I put in more effort just as much as I need to, and sometimes more, if I enjoy it. It's a lot easier to put effort into class you enjoy or like that has a good professor.” – T*

*“Work doesn't feel like work if you enjoy it. Like, like I am, like, enjoying, like, this, like, better understanding of the subject material, like, I'll be definitely willing to put in more effort for it.” – Oscar*

Just as enjoyment affected the students' attitudes towards effort, effort could affect their enjoyment as well. Effort in this context generally meant challenging work, but it was still sometimes related to or measured in time. While many of the students said that they enjoyed having easy classes, the most common reason given was that it would allow them to spend more

of their time on other things, especially their harder classes. Most of the participants, even those who enjoyed easy classes, found that challenging classes and assignments were more enjoyable.

*“I guess more that if I’m just naturally good at something, I don’t have to try and I get lazier and I find it less enjoyable.” – Doctor Manhattan*

*“I would describe the class as the most uh, satisfying learning experience I’ve had at [university] because, just because the amount of effort that I’ve put and... because at the end of the class like, I felt like, I’ve learned so much. I’ve learned more than I’ve expected to learn.” – Peter*

*“It’s enjoyable having a challenge to overcome.” – T*

However, some students found challenges frustrating rather than enjoyable. They were more likely to find enjoyment from a success that did not require much effort.

*“I wish I could do that for every test, feels like... felt more pointish that... I didn’t have to put in every much, I really enjoyed that.” – Cylo Ren*

*“I don’t know, I don’t like to, I guess, struggle with classes. I like it when like obviously the knowledge comes easy and like doesn’t take a lot of effort to learn.” – Mary*

Students who found pleasure in a challenge were more likely to have overall positive views of their undergraduate studies and feel more motivated to put effort into their education. This is in agreement with the framework of Mindset (Dweck, 2006).

#### **Chapter 4.4.4 – Intersection between Judgement, Effort, and Motivation**

Judgement, Effort, and Motivation create a complex system that plays a major role in the students’ lives. Their judgements of themselves affect their judgements of others. Their judgements of others and the judgement they perceive coming from others affect their

judgements of themselves. Their judgements of themselves and the perceived judgements of others can lead to motivation, which drives their choices and their willingness to put effort into their activities, especially school. That effort in turn affects the judgements the students make of themselves and others and feel from others. Two of the most important ways in which this system expressed itself were grades and the idea of an acceptable amount of effort.

As discussed in chapter 4.4.2, students were highly motivated by their grades. Their grades were an important source of Judgement from Others that affected many aspects of their lives. These aspects included further Judgement from Others, Judgement of Others, Judgement of Self, and even whether or not they could continue to pursue the goal of becoming an engineer. Their scholarships were dependent on grades, which could result in a student being unable to afford their education. Even aside from finances, grades could determine their eligibility to remain in college or get a job. This worry could hamper as well as motivate the students. For example, when I asked about his tendency to procrastinate, one student confessed:

*“I fear failure more than anything. And when I ... Well, when I sit down to do homework I'm probably not gonna understand something, which feels like a failure. And so if I procrastinate I put off that feeling of failure as long as possible.” – Geoffrey*

When I asked him what about failure was so frightening, Geoffrey elaborated,

*“I'd say letting other people down. Being a failure, people don't rely on you. And, uh, so yeah, there's definitely letting people down. There's letting myself down. And there's not ... there's failure of not setting up a life for myself after college in which I can help other people. If I fail in college, I get kicked out of school or have a GPA so low that I can't get a job that I was meant to get, then I'll be in a less ideal situation to help other people. I'll be focused on helping*



*myself, like salvaging a life for myself instead of being able to, I don't know, give back.” –*

*Geoffrey*

I have concluded from this research that although grades can be a useful tool in helping the students and their professors gauge their learning, the degree to which grades control their lives is detrimental to their academic efforts.

The connections between effort, smartness, and engineering culture were also important. Engineering is thought of as a field for smart people, and the students felt the need to live up to that (Dringenberg et al., 2019, Leslie et al., 2015). Effort is tied to perceptions of smartness. As discussed in chapter 4.4.1, when I asked the students to judge how smart a peer was by the amount of effort they put into academics, they did not judge the peer who put a lot of effort into their studies as not smart. However, most of them felt that the peer who put in less effort was smarter. The students are motivated to be seen as smart, both by themselves and by others. They also recognized that engineering requires effort, and most did not want to be seen as lazy. Torn between the two beliefs that there are such things as too much and too little effort, the students would find themselves seeking a middle ground. They did not straightforwardly admit this to themselves, however, and buried the struggle under the guise of time management.

## **Chapter 5 - Conclusion**

To better understand undergraduate engineering students' beliefs about their intelligence, I developed an interview protocol, conducted interviews with student volunteers, and analyzed the transcripts. I began with the framework of Mindset and Attitude, Value, and Belief coding. After realizing that these did not adequately capture the social aspect of the students' beliefs, I began examining the students with the themes of Judgement, Motivation, and Effort.

The students were caught in a struggle. Engineering is difficult, so being an engineer requires a certain amount of effort. Needing to put forth too much effort could be a sign that you are not smart enough to be an engineer. They were not only caught between these two societal beliefs, but between recognizing them and denying them as they strove to forge their own identities within engineering culture.

### **Recommendations**

How can we use this information to help students become more successful engineers? While it is a topic that requires further research, I have a few ideas.

In the classroom, it may be helpful to work to eliminate competition among the students. Perhaps instead of showing students the grade distribution in the class for this last exam, it would be more beneficial to show them grade averages from each exam in previous semesters, such as a trend for the second exam to have a lower average than the first. It may be helpful for some students if the teacher reiterates how much time they expect students to spend studying outside of class, but it could backfire, too – a student might challenge themselves to spend less time in an effort to feel smarter, or they might lose confidence if they find themselves needing to exceed that amount of time. It might be better to give a range of expected study time, so that the students

can feel less pressured to spend less time for their self-image. It may also be beneficial to remind students that engineering is hard and will require a lot of work.

Beyond the undergraduate level, it would also be helpful to find a better way to explain engineering to children, teenagers, and anyone else who might become an engineer. While many of the students in this study described their motivation for becoming an engineer as enjoying problem solving and other aspects related to engineering, several students seemed to be at least partially motivated not by the desire to be an engineer, but rather for others to *see* them as engineers. One student, Robert, commented that “I feel like just the title of being in an engineering program kinda infers that you're smart.” Simply being an engineer is a means for him to tell the world that he is smart. While desiring that prestige does not mean an individual is unsuited for engineering, if they had a more concrete and tangible idea of what engineering actually means – and likely other fields as well – some of them might find a niche elsewhere that they are better suited for. On the other hand, that lack of understanding can lead to potential engineers never entering the field. When I was in high school, adults would tell me, “You’re smart and good at math, so you should be an engineer.” No matter how many times I asked, though, no one could give me a satisfactory answer for what an engineer actually was. If I had a better understanding of engineering, I probably would have chosen it as my major in undergraduate school. Instead, I simply had no idea what I wanted to do and chose mathematics with the reasoning that it would be useful whenever I did figure out what I wanted. This problem is not unique to me; the same thing happened to my mother roughly fifty years ago and to many other people I have talked to.

Compliments can be dangerous. Avoid calling people smart, talented, pretty, or anything that sounds like it could be an inherent or irrelevant trait. Try thinking about why you want to

call someone smart in the first place. Instead, praise them for their efforts, or tell them that their hard work paid off.

### **Future Work**

This research was recommended for and received more funding to continue observing students, this time in the context of the classroom.

Further study with a focus on gender would also be interesting. I noticed in these interviews that women were frequently more aware of their more detrimental habits, such as equating their grades to their self-worth.

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**Appendix A - Interview Transcripts**

**Interview Transcript 1: Alice**

Interviewer: Allison Adams

Date Interview conducted: 08/31/2018

Transcribed by: Dong Ren

Interviewer: “And you want to be called ‘Alice’. So our goal today is for us to have a detailed discussion about your beliefs about or the perceptions about the nature of your intelligence...”

Student: “Okay.”

I: “... the discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience how it can be improved for all students. I want to hear your own thoughts and perceptions, I’m expecting that they’ll be different from the thoughts of others, there’s no right or wrong answer. I will aim to understand your perceptive so I will ask questions like, “What do you mean by that?” these questions can be a bit awkward and may reflect... require you to reflect upon what you’ve experienced, so I’ll purposely leave long pauses after my questions. Take your time and if you need clarification let me know... So, any questions?

S: “I’ve got none for you.”

I: “Alright, tell me about yourself as a student.”

30 S: "Umm, like my attributes or just ..."

31

32 I: "Anything."

33

34 S: "I guess throughout high school, I guess I was in the nerd group. I  
35 went to a tech college for half the day during my senior and junior year.  
36 I was always on the AP track, so I've always just wanted to jam pack my  
37 brain full of knowledge and going to tech school was, and all these AP  
38 classes that's where my best reaches for that. So now that I'm in college,  
39 I like, I don't know, I really appreciate that I can choose, what I'm  
40 deciding to learn. Cause, I am an engineering student but at the same  
41 time, I'm in a residential committee for Harry Potter, cause you know,  
42 that's a huge passion of mine. So, I like that, I'm the kind of student that  
43 make my own choices."

44

45 I: "M-hm."

46

47 S: "Like, I was looking over a paper for an assignment I had to write and  
48 I didn't like how the professor was telling me how to write it, cause, like  
49 I understand and I did it but it's like, I don't see how this is effective to  
50 how I'm supposed to write my paper. So, I don't know, I like making  
51 my own choices, I follow the rules but, as a student myself, I'd rather be  
52 told, 'this is what you're going to do, you can do it the best way that  
53 suits you just make sure you're the one doing it.'

54

55 I: "So you'd say that you prefer guidelines over rules sort of?"

56

57 S: "Yeah... like my favorite class in high school was my pre-Calc. class,  
58 cause all the teacher did was, 'Here's the book, here's the notebook I  
59 want you to use, you teach yourself the material, I'm here whenever you  
60 have a question'."



61

62 I: "Okay, so... if you had to put adjectives for yourself as a student,  
63 what would you choose?"

64

65 S: "Some-what responsible. Um... I'd say procrastinator, because I  
66 work better when I have a shorter time frame, honest, perhaps a little too  
67 honest at times, quiet."

68

69 I: "Okay, so, when you say a 'some-what a responsible student', what  
70 does that mean to you?"

71

72 S: "Well, usually when you say you're a responsible student that means  
73 people think like, you do things, like when you get it, you do it, you turn  
74 it in. But for me, when I get an assignment I take time to evaluate it and  
75 figure how exactly how I want to do it. And then I give myself a break  
76 time, to like, digest and... cause I work better when I get the stuff that I  
77 want to do done before I get to the stuff I need to do, so then I can..."

78

79 I: "Okay."

80

81 S: "... just, chill afterwards... So I don't always do stuff immediately  
82 after I'm assigned it, unless I'm in the classroom and I don't have a  
83 choice."

84

85 I: [Laugh] "Sure."

86

87 S: "Yeah, so... some-what responsible, I don't do stuff immediately but  
88 I do get it done, and in the time frame that they wish me to do it."

89

90 I: "Okay, and you also mentioned that you're a bit of a procrastinator."

91

92 S: "Yeah."  
93  
94 I: "Could you describe what that means to you?"  
95  
96 S: "Umm, that usually just comes when I'm writing the papers, I don't  
97 do like, my... a lot of people you know, work better when they start a  
98 paper, take a break, go back to the part then take a break, that's hard for  
99 me to understand how people are able to do that. I had like, I had a paper  
100 that was assigned last week and it involved people watching, so I had all  
101 my observations done, but then I didn't write the paper until 10:00pm  
102 last night, and it was due this morning at 10:00am. But, that's just how I  
103 work, I work better when I have this time frame, my brain's already like  
104 snapping like, 'Okay, this is what we want to see next, what goes next,  
105 this is how we're going to write it', so quote, unquote, "procrastinator",  
106 cause I don't—I only write papers at the last minute."  
107  
108 I: "Okay, and you also described yourself as a quiet student, what does  
109 that mean to you?"  
110  
111 S: "I don't get... I don't like to talk in the classroom, unless no one else  
112 is, so I'd like to get engaged, but I don't want to be the one always  
113 putting my voice out there."  
114  
115 I: "Okay"  
116  
117 S: "So, if a teacher asks a question, I'd like to see what other people are  
118 saying, and I address it myself and compare in my brain, but if no one  
119 else is talking about it, then I'll put my input out there hoping someone  
120 either contradicts or adds to it.... so I'm... quiet until prodded enough."  
121  
122 I: "You also said you were honest, maybe too honest."

123  
124 S: “Yeah. [Laugh]”  
125  
126 I: [Laugh]  
127  
128 S: “If I do something wrong, but I know I could get away with it, you  
129 know, most people would just... get away with it, but if I do it, it’s  
130 gnawing at me and I have to let the teacher know, like okay, I did it, I  
131 got the work done, but I also did this, so if you need me to explain it, I  
132 can but on the paper it may look awful.”  
133  
134 I: [Laugh]  
135  
136 S: “So I’ve had to do that before, like in the pre-calc class we had to  
137 write definitions in our notebooks, I once wrote down... like he wanted  
138 the definition of an ‘asymptote’ in our notebooks, and he would come  
139 and check it. I wrote down that an asymptote is the forbidden love of the  
140 graph, and he came and looked at it and he was like, ‘You realize I am  
141 checking this right?’, and I’m like, ‘After I wrote it, yes’...”  
142  
143 I: [Laugh]  
144  
145 S: “... But before I wrote it, I forgot and I wrote it in pen, so now it’s  
146 there, congratulations.”  
147  
148 I: [Laugh]  
149  
150 S: “I got bonus points for it [Laugh]...”  
151  
152 I: “Alright, that’s pretty funny, I’m rather fond of the Gandalf, ‘You  
153 shall not pass’.”

154  
155 S: "Yes, I like that too, that's good."  
156  
157 I: "Alright, so... let's see, if you succeeded on an exam, how would you  
158 react?"  
159  
160 S: "like, was it a particularly hard exam that I was worried about or it's a  
161 normal exam?"  
162  
163 I: "Umm, how about tell me one and then the other?"  
164  
165 S: "Well okay, if it's just a normal exam, then usually before exams I'm  
166 pretty relaxed during them, cause I can't change the outcome if I don't  
167 know the information, I don't know it."  
168  
169 I: "Sure."  
170  
171 S: "So like, once I get the grade, it's like, 'Okay, I got this grade', but if  
172 I'm particularly worried about it, and I got a good grade, I passed it,  
173 good job then... yeah, I'm pretty excited. For some exams, if I'm not  
174 particularly interested, in said subject, I do worry a little, just because I  
175 wonder what the teacher is going to put on it, what did my memory  
176 actually hold onto, but that's usually turns out fine cause they do the  
177 generic information that they expect everyone to remember. And that's  
178 especially cool, they're like, 'we're gonna slide this one thing I said,  
179 once in there', then if I get the answer right, oh yeah, it's a party."  
180  
181 I: "Alright, so... what would you consider to be 'succeeding' on an  
182 exam?"  
183

184 S: "Just doing as well as you perceive yourself to, it's very much a  
185 subjective answer. Cause for some people getting a 'C' is succeeding,  
186 but for some people, they don't succeed unless they get an 'A'. So like,  
187 for me, it once again, depends on subject, if I, like, I prefer to get 'A's',  
188 just because that's always what I've gotten and so it's sort of a... ritual  
189 for me. But if I get a low grade, it's usually I want to... like my  
190 definition of succeeding is improving as time goes on, if it's a subject  
191 that tests you on your improvement."

192

193 I: "Okay, do you think a... you know, when professors curves a grade,  
194 do you think that has any effect on your perceptions on what a success  
195 is?"

196

197 S: "Usually no, simply for the fact that if they curve a grade that means  
198 there was a specifically hard question that they knew was in there. And a  
199 large group of people got that question wrong so that means they need to  
200 revisit the subject. So if I also got the question wrong, then, you know,  
201 It's like sure, I'm just part of the group, but if I got it right, then I'm  
202 getting more information than I already understood."

203

204 I: "Okay, what if you did better than someone whom you considered to  
205 be smarter than you are?"

206

207 S: "Oh that happened to me once, it was very early then, I was so  
208 excited. Just cause I was friends with him and everyone called him the  
209 smartest person in school, and I was the only one who made 100 on that  
210 test. And I told him years later, after we were closer friends, but that was  
211 a very proud moment for me [Laugh]."

212

213 I: "Alright, do you think that affects... how, how you can... what you  
214 consider to be success or ... does that just mean ... succeeded more?"

215

216 S: "I don't think it changes my definition of what success is, cause I  
217 mean, I guess it'll be quote unquote, I guess what I consider quote  
218 unquote a "success" for myself. But I knew I would've passed the test, it  
219 was something that, I knew all this information to, I was raised with all  
220 this information and... but just learning that... cause it was one of those  
221 circumstances where the teacher said 'We're not going to count this  
222 grade, cause everyone did fairly poorly on it, only one person passed it'  
223 and then I got my paper back and it was 100, and so... I was more so  
224 confused cause I was raised with this information, but then once I found  
225 out that, the... my friend just... did not do well in it, at first I was like,  
226 'Ha', but I want to say that success is more a prideful situation."

227

228 I: "Okay... So, in that situation where you did better than someone who  
229 you think is smarter than you are, would you share that with somebody  
230 else? I mean, you shared it with me, clearly, but... [Laugh]"

231

232 S: "Cause I think it's a funny story..."

233

234 I: "Yeah."

235

236 S: "... That was back in 8<sup>th</sup> grade..."

237

238 I: "Sure."

239

240 S: "...I umm was on the same track, like I went to the same tech school  
241 as my friend. And so, one day him and his best friend brought up the  
242 subject of who's smarter between the two and asked for my point of  
243 view on it. And I told them, person ... we'll say the smartest boy was  
244 person A and his best friend was person B, I'm friends with both of

245 them. So I said, ‘Person B is more knowledgeable on a broader spectrum  
246 of subjects’ ...”

247

248 I: “Sure.”

249

250 S: “... ‘While person A is very intelligent in this one subject which is  
251 technology-based information’, so that’s why people perceive him as a  
252 genius since it’s a harder concept for people to understand.”

253

254 I: “So a Jack of all trades and a master of one.”

255

256 S: “Yeah, basically that was the situation, so I told them how, in that  
257 class, I was the only one who made 100 while like, person A did not. So  
258 I’ve shared this story before to help prove points, help subject err, help  
259 suggest information to break down arguments, but... yeah.”

260

261 I: “So, you...so you would share it but only if it’s relevant to what you  
262 were talking about?”

263

264 S: “Yeah, I was only prideful in that one instance, like when I first  
265 founded out. Now, I said it in a proud voice because I think it’s a funny  
266 story...”

267

268 I: “Yeah.”

269

270 S: “... Just because I knew the info... I’ll be honest with you, it was an  
271 English test, about the parts of speech and the only reason I remembered  
272 all this information was because of School House Rock. And so, it’s a  
273 humorous story to me...”

274

275 I: “Yeah.”

276  
277 S: "... 'cause, I learned stuff through music and like, artsy stuff but also  
278 the technical side things..."  
279  
280 I: "Sure."  
281  
282 S: "... So, while I was taking this test, all I could remember was singing  
283 the songs in my head and I was probably dancing a little. So I know I  
284 probably looked like a freak, but I got all of them right so..."  
285  
286 I: "[Laugh] If it works, it works."  
287  
288 S: "Yeah."  
289  
290 I: "Alright, so... what is your, I guess motivation to... not share that  
291 when it's not relevant?"  
292  
293 S: "I don't know, I don't talk about things unless they are."  
294  
295 I: "Okay."  
296  
297 S: "The only thing, the only time where I bring something not relevant  
298 to the conversation is if it's silent and I ask a hypothetical ..."  
299  
300 I: "Mhmm."  
301  
302 S: "... It's been happening a lot with my roommate just because, I don't  
303 like, knowing basic information about people unless they want to share  
304 it, I don't want to go seeking it cause it will come up in conversation  
305 another time. So I'd like to ask her very strange hypotheticals, 'If you  
306 were a turtle, what kind of turtle would you be?' Because you know, if



307 someone says they would be a snapping turtle, that can show that  
308 they more of an aggressive side to them, but it's 'cause they thought  
309 about it. But if they're just like a normal sea turtle, they're more, let's  
310 just go down the waves and be like Crush from 'Finding Nemo', so..."

311  
312 I: "Dude... [Laugh]"

313  
314 S: "Dude... you gotta go through the current! [Laugh]"

315  
316 I: "Okay..."

317  
318 S: "Mr. Crush was my father..."

319  
320 I: [Laugh] Alright... if you failed to succeed on an exam, how would  
321 you react? "

322  
323 S: "I'd be, a little heart broken, but that just means I need to go back and  
324 reread the information before I go on. So it's a learning experience but,  
325 at first I'm just... crushed, I've only failed a few exams in my life, like  
326 throughout my school career and the past few times, it was because I  
327 took way too time for other things in my school schedule, and I haven't  
328 had... didn't make time for studying."

329  
330 I: "Sure."

331  
332 S: "So like it helped me try different ways to plan my schedule so it can  
333 set me up for the next exam."

334  
335 I: "Okay, so... when you fail to succeed, would you consider that  
336 actually failing the test, or would you consider that still passing but not a  
337 great grade?"

338

339 S: "Both, it's back to, like, my version of succeeding is just improving  
340 on what I did last time, so if I didn't improve but I still passed the test,  
341 then you're not...I'm not happy with it, because I fell back instead of  
342 grew."

343

344 I: "Alright, so... what if other students did much better than you did on  
345 that test?"

346

347 S: "Oh they probably did. [Laugh] To be honest, so you know, it doesn't  
348 affect me, my score probably doesn't affect them. I'm proud of them,  
349 I'm very proud of them. But like if they tell me they did better, I'd  
350 encourage them like, 'Dude, that's great, I'm so proud of you'."

351

352 I: "Sure."

353

354 S: "... but I've never thought about it in relation to how I feel about it,  
355 cause I'm very much of a supporter..."

356

357 I: "M-hmm."

358

359 S: "... So..."

360

361 I: "And what if, somebody... one of the students who did much better  
362 than you did was someone you don't consider as smart as you are?"

363

364 S: "Then that's great, they're proving me wrong. They're showing that  
365 they have like change, like, they may not have change but they  
366 understand this concept and so they are expanding on their knowledge  
367 and that's great. Love it when people are learning."

368

369 I: “And, again when you... when that situation happens would you share  
370 it with others and if so, who?”  
371

372 S: “That someone I didn’t perceive as smart as I am did better than I  
373 did?”  
374

375 I: “Either that or that you just didn’t do well on that test, either way.”  
376

377 S: “And... what’s the original question?”  
378

379 I: [Laugh] “What if you failed to succeed on an exam.”  
380

381 S: “Yeah but like, what’s this ... like what [stammers unintelligibly] ,  
382 sorry, English.”  
383

384 I: [Laugh]  
385

386 S: “What did you just ask?...”  
387

388 I: “Okay.”  
389

390 S: “Before I asked my original...”  
391

392 I: “What... would you share that information with others and if so,  
393 who?”  
394

395 S: “Oh sure, umm, what umm, just people, just for comparing grades,  
396 and if so, I’m not going to hide my grades. Unless... the only time I  
397 think I’ve ever held my grade was if it was significantly better than  
398 someone else. Because often times, if you say you did better than  
399 someone, they feel bad, especially if it’s in the group of people... if I

400 know the person. If I know that they won't feel that way, then I will  
401 share. But so if I feel it and we're comparing grades, I'll say it. 'Cause I  
402 know that was my fault, I don't want them to take pity on me, 'cause it's  
403 my own fault, I know what I did wrong. Like, I've told my mom, 'cause  
404 you know, she wants to know my grades, and I tell her, 'Okay, this  
405 happened, it's Okay, I know what I need to do to improve'."

406

407 I: "Sure, Okay so..."

408

409 S: "Oh no!"

410

411 I: "It's fine, so tell me what motivates you to keep pursuing an  
412 engineering degree?"

413

414 S: "It's always expanding, there's always so much to learn. I just... have  
415 you ever heard of how K-State asks us to take like the 5-strengths test?"

416

417 I: "M-hmm."

418

419 S: "So one of my things is 'Learner', and that just means I'm always  
420 wanting to know more and more and more, just like expand and it's just  
421 when I find stuff out, I get so excited just because like, 'Oh, that's cool,  
422 that's something new, that's interesting'. So with engineering, you're  
423 learning how people took this small concept, that people thought  
424 possible, like that, that happens with a lot of things, but you know, I'm  
425 in computer love...err computer science, you have Ada Lovelace, one of  
426 the first like, computer scientists."

427

428 I: "Oh yeah, I love Ada."

429

430 S: "I know, that's so interesting to find out, because you know not a lot  
431 of girls are in this field, but the first person to code was a woman."  
432  
433 I: "In fact, computers used to be a woman's job because it was  
434 considered secretarial work."  
435  
436 S: "Exactly."  
437  
438 I: "Men only got into it when they realized it had money."  
439  
440 S: [Laugh] "Mhmm."  
441  
442 I: [Laugh]  
443  
444 S: "Exactly, and I mean, you have rare exceptions from that, you know  
445 Charles Babbage with his difference machine one and two and his  
446 analytical machine. They're these impossible concepts that you know, it  
447 was based upon other information people have had you know. You  
448 have... err... They found something in a greesh in the Mediterranean Sea  
449 that connects to Greece, where it was an old dial that was put inside a  
450 box and even like, in that deep... ancient knowledge, they made a  
451 machine in which when you turned it. On one side had... like, both sides  
452 had dials off one side there's one dial and it had err, like something with  
453 a ball attachment that represented the moon, and it had like, one side  
454 white and one side black. And it had one for the sun, and it turned and  
455 on that one side, it showed the position of the moon, sun and..."  
456  
457 I: "Kind of like a star chart."  
458  
459 S: "... Yeah, so like, the position of the moon, and then on the back,  
460 they actually calculated this random chance of when eclipses were going

461 to happen or like, what time of year these things would happen. So as  
462 you turned it, you had the date, what was happening on one side and the  
463 visual representation of it on the other. And so that's just like such an  
464 impossible concept and then, you know, more computer-like  
465 technologies were coming from that and then you have Charles Babbage  
466 who came up with the analytical machine. And he was never able to  
467 finish like, building it, cause the Government found out that he wasn't  
468 trying to build this difference machine two, so he was stealing that  
469 money making these analytical machine but, it's just like he made this  
470 imaginary thing and he put it on paper and he did it so well. He tuned  
471 these concepts so well that we were able to make it. And it's like,  
472 learning that... Oh my gosh, just like, people are amazing, the mind is  
473 just amazing, things people come up with. And you're just learning  
474 these things that people have discovered or learned and you can make  
475 your own discoveries off it or you learn based off your own  
476 discoveries."

477

478 I: "So in a nutshell, are you saying that, just the possibility of learning  
479 things is what motivates you?"

480

481 S: "Yeah."

482

483 I: "Alright, why do you think that's motivating to you?"

484

485 S: "'Cause why not? Why not go out and stand in the middle of a crowd  
486 and just observe? And learn what people are doing. Or like, observe how  
487 different groups of people are doing things and make your own  
488 assumptions about that and like, try to change, or make a paper about it  
489 like, that's what sociology, why not go to the library where you can sit  
490 down, find a book you've never read before that's like, based upon,  
491 other people's knowledge and read it and learn something new. It's like,

492 why not just do that? There's nothing stopping you, learning's the one  
493 thing that people have tried to contain for people but, they just can't.  
494 'Cause you're learning no matter what you do..."

495

496 I: "M-hmm."

497

498 S: "Even if you do something repeatedly over and over again, you're  
499 learning new things about it. And when people say you learn something  
500 new each day that's true, you just don't realize it... I don't know, I don't  
501 see why people aren't excited to learn, 'cause it is just so motivating to  
502 get up and go do something with life.' Oh, your phone yelped!"

503

504 I: "Yep, sorry I forgot to turn the ringer off."

505

506 S: "It's Okay, it just sounded like someone punched it, it's like, 'Oh no,  
507 poor phone!'" [Laugh]

508

509 I: "Oh no, it said 'Look.'"

510

511 S: "Oh, Okay." [Laugh]

512

513 I: "I'm gonna go ahead and turn that off now... sorry."

514

515 S: "Oh no that's Okay, it's cute. It's just a little alarming, like you poor  
516 phone!"

517

518 I: "It's fine. So if you were to make a pie chart of your... Gah, I almost  
519 said 'meditations'... I meant, 'motivations'..." [Laugh]

520

521 S: [Laugh] "I don't meditate."

522

523 I: "If you were to make a pie chart of your motivations as a student,  
524 what percent would you say you are motivated by your grades, versus  
525 your desire to learn?"  
526  
527 S: [Pause] "Can I draw it out?"  
528  
529 I: "Yeah."  
530  
531 S: "With this whiteboard right here... so one is desire to learn [Audible  
532 writing] and one is grades?"  
533  
534 I: "Yeah."  
535  
536 S: "Or as we discussed, some would say success."  
537  
538 I: "M-hmm."  
539  
540 S: "Umm... [Pause] A little less than a 4<sup>th</sup> for grades, I'm much more  
541 excited to learn, then, 'cause I can't exactly give you what this  
542 percentage is, between a 4<sup>th</sup> and a 3<sup>rd</sup>, so... yeah."  
543  
544 I: "Okay. Would you say you're a visual learner at all?"  
545  
546 S: "Okay so those quiz is whether, 'Are you audio, visual, hands-on?' I  
547 hate those. Because whenever I take them it's always 33, 33, 33. So it  
548 depends on what I'm trying to think."  
549  
550 I: "That's fair."  
551  
552 S: "Yeah. So if you look at my planner, it's color-coded."  
553



554 I: "M-hmm."

555

556 S: "And I have a calendar in my room which has the times for my  
557 classes and what I'm doing and is also color-coded. So I guess that's  
558 more visual."

559

560 I: "M-hmm."

561

562 S: "But, umm, sometimes if the teacher starts discussing something that  
563 I find interesting or weren't difficult, umm... it's going to sound crazy...  
564 I start playing, err ... an imaginary piano, cause if I connect that  
565 information to a movement, and I'm trying to remember it later, and I  
566 start doing the movement, my brain's like, 'Okay, connecting sort of'."

567

568 I: "That's fascinating."

569

570 S: "Yeah, and then with auditory, err... like when I'm doing work, I  
571 have to be listening to music or in a busy area where there's always  
572 noise. Like, I could do homework on a bus just because there's so much  
573 talking. So it's sort of like, I'm alone in a group, but the group is helping  
574 me be alone."

575

576 I: "Okay."

577

578 S: "Like, I don't like doing work in err... individual space. Like last  
579 night when I wrote my paper, I went out to the lobby, cause there's a  
580 group of people watching a horror film. So I was still listening to my  
581 music so I wasn't distracted by the plot of the film, but I was in a  
582 scenario where I was surrounded by people..."

583

584 I: "Okay."

585  
586 S: "... with their own individual noises that I can sometimes hear over  
587 the music."  
588  
589 I: "Okay, interesting."  
590  
591 S: "Okay so this, this probably makes me look like an individual  
592 learner."  
593  
594 I: "Yeah, individual or hands-on."  
595  
596 S: "But...sure!" [Laugh]  
597  
598 I: "Okay, so would you say that ratio or percentage or whatever is the  
599 same for all your classes?"  
600  
601 S: "No, that's probably why the ratios are always so even. Because  
602 depending what question I'm asked, the answer changes. So in...  
603 English..."  
604  
605 [Not audible over recording but the interviewer's neck cracked when she  
606 moved her head]  
607  
608 S: "Nice crack!"  
609  
610 I: "Ah, sorry."  
611  
612 S: "Oh no, that's okay, err... in English, like, I'm more so watching the  
613 teacher, and doing the hand...like, the movement thing. So it's like, so,  
614 it's like, I like watching people's mouth as they talk. But in the  
615 engineering, I want to be feeling what I'm doing, so like coding, I want

616 to... I don't like looking at examples, I want to type it out and see how it  
617 runs..."

618

619 I: "M-hmm."

620

621 S: "... then use that as an example to do what I need to do."

622 I: "Okay, in what ways are your grades important to you?"

623 S: "I guess it's... I'm going to say this, and I want to point out in my  
624 brain, it sound like it sounds bad, you know how that happens?..."

625

626 I: "M-hmm."

627

628 S: "... Like to you it doesn't sound bad once you think you say it, but  
629 once you say it, you think it sounds bad but doesn't actually sound bad.  
630 It's like, it's kind of like how I was trained. Cause in elementary school,  
631 I made good grades, I got to stay for an extra hour watching 'Courage,  
632 the Cowardly Dog' and my mom would make no-baked cookies."

633

634 I: "Yum."

635

636 S: "Yeah, awesome. And so, they were easy to make good grades. And I  
637 guess, I don't... school's always been easy, and I like, once I've like,  
638 took the strengths test, you sit back and you try to analyze yourself and  
639 see if they actually fit, I think it's maybe because I am such a learner.  
640 Cause I catch onto these concepts quickly and so I'm able to apply them  
641 so... I don't think I'm motivated to get good grades, they kind of just  
642 happen. So like, if I get bad grades, I think the only reason I'm crushed  
643 is because that normality is gone."

644

645 I: "Mmm."

646

647 S: “And I don’t like having to worry about something that’s usually so  
648 repetitive.”

649

650 I: “Okay”

651

652 S: “So like if I get a ‘C’, I’m a little crushed, if I get a ‘B’, I’m fine. But  
653 like my first ‘B’, I was like, ‘Oh no, it’s a ‘B’, it was an 88.9’. And my  
654 teacher was like, ‘it has to be an 89, you have to have an 89.5 for it to be  
655 an ‘A’’, I was like, ‘Noooo’. [Laugh] But now it’s like, chill ‘cause, it’s  
656 like oh, okay, that’s fine.”

657

658 I: “Alright, and then, in what ways is that learning important to you?”

659

660 S: [Pause] “in what ways is learning important to me?”

661

662 I: “M-hmm.”

663

664 S: “Its life. It’s like that meme where it’s like, ‘chipotle is life, like that  
665 kid that’s sitting in chipotle booth and is like, ‘learning is life’. I don’t  
666 know what’s going on with that kid, I hope he’s okay now. I hope he  
667 realizes he was a mem and he’s like, ‘Yeah, that was me’ but no, umm,  
668 learning’s just so important, cause you’re not going to get anywhere in  
669 life if you don’t learn from... what you’re doing.”

670

671 I: “Sure.”

672

673 S: “And I want to say learn from the past, like some stuff you should  
674 learn from the past, I’d say it’s more important to learn from like, what  
675 you’re doing now, than go back in the past and go like, ‘Oh man, 5 years  
676 ago I did that! Well gotta learn from it now’. Like no, learn from it then  
677 and then apply it now.”

678

679 I: "Okay... so you're basically saying that learning is everything?"

680 S: "Learning is everything [Laugh]. You can't do something without a  
681 part of your brain like, taking the concept and digesting it and that's  
682 basically learning. At least that's what I think."

683

684 I: "So, say you have to choose a professor for a core course that's  
685 required for your major. There are two options, one, a professor where  
686 it's more difficult to succeed but you're likely to learn a lot, or two, a  
687 professor where it's easier to succeed but you'll likely not learn as  
688 much. Which one would you choose and why?"

689

690 S: "A, because I don't want to participate in a class that is perceived as  
691 'easy,' I want to be challenged, I want to learn all that they can tell me.  
692 Cause when you tell me that, it makes it seem like, one's an experienced  
693 professor, he's figured out his routine and yes he's rigorous, but he  
694 knows he's going to give you all the information you need and then  
695 some. But the other one, it makes it seem like they're more laid back and  
696 you can probably get away with more, and I don't want to be able to get  
697 away with anything. I want to digest all they have to tell me based upon,  
698 what they've done and how they've figured out the best way to teach the  
699 subject is."

700

701 I: "Okay, if that class was pass or fail, would that change which  
702 professor you'd chose at all?"

703

704 S: "Nah, if I fail but I've learned, then I've succeeded at my own...  
705 mind."

706

707 I: "Alright, so tell me about your learning and studying strategies."

708

709 S: "I don't really study. [Laugh]"

710

711 I: [Laugh]

712

713 S: "I know that's bad and I'm in college now and everyone's like, 'Got

714 to have those studying techniques", but it's like... my studying is in the

715 classroom, cause I don't do well by reading over my own notes, unless I

716 make them amusing. And I can't really do that by turning in notes,

717 sometimes I do anyways, my history teacher finds it very fun to read my

718 notes. Cause I stopped writing 'Americans' and I started writing

719 'USians' and then I draw... the first time I did it I drew an alien by it,

720 cause it sounds like something you'd call an alien... an USian... but, I

721 don't know, I do much better when I learn, like the concepts in the class.

722 And then if I don't understand it in that class, then I reach out to

723 someone who I know is also, like who did understand it. And so that's

724 my form of studying. Hearing it from someone who understands it but in

725 a different way. 'Cause you know, they did the study where you only

726 learn 30% of the course material from a professor or your teacher, but

727 over 80% from a peer when they tell it to you."

728

729 I: "Hm."

730

731 S: "Cause they're telling it to you in a different way that relates more to

732 your age group I guess."

733

734 I: "Okay, that makes sense."

735

736 S: "M-hmm."

737

738 I: "So, how did you come to use that strategy?"

739

740 S: "It's just what works, I don't know, I tried reading notes, I've... It's  
741 just not how my brain clicks. Cause it's easier for me to get distracted  
742 cause my brain's like, 'you've already heard this information,  
743 someone's already said this to you and you copied it down. Why are we  
744 hearing the same information that we knew we don't understand yet?'  
745 So I guess studying for me works more when I understand the concept  
746 and like, my brain's like, 'Okay, we know this, we know this, we know  
747 this, what the heck is this?! Go find someone who knows what this is.'  
748 Then... so, if that makes sense."

749

750 I: "Have you found... talking to a peer about a subject versus going and  
751 talking to a professor in person about the subject, have you found that  
752 peers are still more useful in that regards than professors?"

753

754 S: "They're more accessible. You know, I'm only a freshman in college  
755 so I haven't experienced what it's like to go ask a professor something."

756

757 I: "That's fair."

758

759 S: "So you know, I'm going to based on my high school information and  
760 how I learn from there, but... oh I asked a question for my sociology  
761 professor just because, umm... he told us, what the paper was in class,  
762 and I just go and started collecting my research, I did not look at the  
763 paper that said what we were supposed to do, and apparently we were  
764 supposed to just sit in one place for 30 minutes, take some stuff and  
765 write a paper about it. I went to a total of four different places, sat there  
766 for varying amounts of time cause I knew exactly what I wanted to do  
767 for my paper so I asked him, 'Is this okay?', 'cause you know, no one  
768 else can tell me that. So if no one else can tell me the information, I'm  
769 okay with, I'm comfortable reaching out to the professor, be it in person  
770 or Email."

771

772 I: "Mmm."

773

774 S: "But if I know that it's easier to access in that person... the person I  
775 can access can give me the information I need, then I'll do that. And I  
776 guess that happened just because, you know, professors are busy people,  
777 they have possibly a fuller schedule than you do. Please just give them  
778 that time that they need to rest, to rest."

779

780 I: "Okay, how well would you say that your studying strategies have  
781 umm... changed over time?"

782

783 S: [Pause] "I guess I'm... I used to be much more about I'm going to  
784 write this down, like I'm going to read the textbook and write down the  
785 information from that, and then read how my brain perceived it, and then  
786 go off that. But, you know they kind of have you change that the further  
787 you get in school, cause they think in college, you're going to have to  
788 like, listen and just write about what they're saying. But so far I haven't  
789 experienced that, but like, I do like to write more what the professors  
790 themselves are saying, if I find them particularly amusing or interesting.  
791 Like my calc. teacher this year, he says a lot of funny things, he tried to  
792 make it easier to understand for people, and it like, doesn't help me  
793 understand it more, but it still write what he's saying down cause it's fun  
794 to look back on. And I guess like, it helps me remember what he was  
795 saying about the subject material."

796

797 I: "M-hmm."

798

799 S: "So you know, I went from writing from the course material and  
800 somehow, that evolved to writing what people are saying more often."

801



802 I: "Okay."  
803  
804 S: "I guess I used to be a little hands-on and now I'm a little auditory, if  
805 you want to take it that way?"  
806  
807 I: "Sure, okay. Do you have any idea like, at what point in your  
808 scholastic career things have changed?"  
809  
810 S: "I like that word," [Laugh] "Word of the day!"  
811  
812 S: "[Whispers] At what point do things change? I have no idea, to be  
813 honest with you. Maybe in freshman year of high school. Cause I... we  
814 got a new choir director and she's the one that's like, 'You learn more  
815 from your peers', she's the one that taught us that."  
816  
817 I: "M-hmm."  
818  
819 S: "And... like she went downhill from there, she soon became my least  
820 favorite director that I've worked with but that's Okay, she's still a fun  
821 person. But umm... yeah I can't pin-point an exact moment, I guess  
822 freshman is when I started, like, trying to hear what other people had to  
823 say about the course material instead of just one person and the  
824 textbook."  
825  
826 I: "M-hmm."  
827  
828 S: "'Cause I like looking at other people's perspectives."  
829  
830 I: "Okay..."  
831  
832 S: "Does that..."

833  
834 I: "... That makes sense"  
835  
836 S: "Yeah, I'd rather sit in a group and see one question and go through  
837 the group and hear what other people had to say if it's similar or  
838 different."  
839  
840 I: "Okay... so, in general, how much effort would you say you put into  
841 your classes and why?"  
842  
843 S: "Now, I put quite a bit just because now it's my life, you know, you  
844 live on campus, or you're walking around on campus or this academic  
845 area, this scholastic area..."  
846  
847 I: [Laugh]  
848  
849 S: "... I put as much effort as I see I need to, so it varies. Like, I'm in a  
850 class that's literally called, 'Muggle Studies', and it's about how 'Harry  
851 Potter' affected culture and society. So, I know 'Harry Potter' fairly well  
852 just because, for some... I like fiction, I like... 'cause that's some... a  
853 way to expand my knowledge, and other ways people cannot, only that  
854 one author can."  
855  
856 I: "M-hmm."  
857  
858 S: "So, reading about how they've developed a place in their brain is  
859 really interesting. Umm... But yeah, I put in as much effort as I need to,  
860 and Muggle Studies will probably will to later on the year as we need to  
861 apply more of the sociology that we're learning into it. Engineering has  
862 always gotten a little more effort, cause I didn't start out wanting to be  
863 an engineer, it was like, a spark of curiosity that blossomed one day, and

864 so, it's not something I'm completely familiar with, I have...part of my  
865 brain is technical. So, for, to delve deeper and expand that side of my  
866 brain, which has it in the past, it takes a little more effort since, it's not  
867 later on."

868

869 I: "Okay, do you feel like you learn more from classes that you have to  
870 put more effort to?"

871

872 S: "Technically yes, like I said, I haven't always been interested with  
873 engineering, so I'm learning more about that engineering field. But my  
874 mom was an English and reading specialist so I grew up with English  
875 and that side of learning. So I've never had to put effort into it so  
876 therefore I'm not learning as much. Like I hated normal English classes  
877 in high school, cause they taught the same thing over and over and over  
878 again. And I, I like swore that I would not step foot in a regular English  
879 class if I could avoid it, and I did. Cause I don't learn anything in those  
880 norm... like quote unquote "normal". What I mean by that is in my  
881 freshman year I was in pre-AP, sophomore pre-AP, Junior AP..."

882

883 I: "Sure, I was too."

884

885 S: "... Yeah senior, college classes, so..."

886

887 I: "Okay..."

888

889 S: "then freaking comp 1, they went over nouns again and I was like,  
890 'No! we're in college class, know your nouns!'" [Sigh]

891

892 I: "So..."

893

894 S: [Laugh] "I'm sorry, I'm reading some of your notes like when you  
895 take a moment of silence..." [Laugh]  
896  
897 I: [Laugh]  
898  
899 S: "... And what's that say? Annoyed about nouns?" [Laugh] "Yeah, I'm  
900 a noun- Yeah, that's true." [Laugh]  
901  
902 I: [Laugh] "Yeah, I'm experimenting with taking notes on your behavior  
903 rather than saying, 'Oh she was happy when we were talking about  
904 this.'" "  
905  
906 S: "Yeah, I saw you put 'excitement' when we were talking about  
907 learning, so I think that's pretty cool."  
908  
909 I: "Excellent, so just try not to let this affect how you behave." [Laugh]  
910  
911 S: "Oh no, I'm not, don't worry. I knew that coming in here that I get to  
912 be completely myself with no judgement 'cause it's for research  
913 project."  
914  
915 I: "Yeah! Let's see, where was I?"  
916  
917 S: "We were yelling about nouns."  
918  
919 I: [Laugh] "Yes we were, so umm, compared to your peers, how much  
920 effort do you think you put into your classes?"  
921  
922 S: "Depending on the subject, in engineering... especially since, so the  
923 engineering class that I'm in is a scholar's class, cause I was originally  
924 in the scholar's program, but I had drop it due to financial reasons."

925

926 I: "Mmm."

927

928 S: "So a lot more of these people are more knowledgeable about what  
929 they're doing. But coding is something that I've always been able to do  
930 in the moment, but then like, the next day, I'm confused myself about  
931 what I just did. So I had to put more effort into that while other people  
932 seem to do it with ease. But in other class... like, any other class besides  
933 that, I feel bad because I don't have to put as much effort into it. It's  
934 like, in the back of my brain, it's not even in the back of my brain and I  
935 do it, and I quote unquote, "succeed"."

936

937 I: "Okay, so you just say it depends on your versus their prior  
938 knowledge and such of the subject?"

939

940 S: "Yeah."

941

942 I: "Alright."

943

944 S: "it just comes with stuff that you know, like I told that to one of my  
945 senior, one of my friends who's a senior in high school now, cause she  
946 asked why my life can always be easy, and it's like, 'cause you don't  
947 grow, you don't learn from it, if it's easy for you, that means you've  
948 already obtained this knowledge and it's boring for... to you. But if it's  
949 hard, it means you're invested somewhat, and you're willing to put that  
950 effort. If you're not willing to put that effort in then... then go find a  
951 new hard course."

952

953 I: "Okay, So think for a moment about a subject or a class that you had  
954 to put in a lot of effort to succeed in, describe what that looked like."

955

956 S: "What it looked like? Like in the physical sense or...?"  
957  
958 I: "More just... what was it like?"  
959  
960 S: "Umm, first hard class was junior year, AP computer science  
961 principles, CSP. Loved the teacher, she made it a little more easier but  
962 I've never dealt with coding before, so being thrown to this world of  
963 like, you're now dealing with functions but it's not the mathematical  
964 sense, cause math is a second language. So learning these new  
965 definitions for like, functions, you're calling this and like, these, you  
966 have all these different variables and methods that are set, like their  
967 terms are set, the variables are still variables, you can change them as  
968 you please but like... you like, yeah... this makes... I can't voice what  
969 this means, I'm sorry. But...that...that's, I don't know how to voice  
970 this..."  
971 [S starts tapping her hand around on the table]  
972  
973 I: "I'm going to write that down as 'popcorn hand movement'."  
974  
975 S: "Okay! I like that, that's fine. So yeah, APCSP was the hardest, like  
976 my first ever challenging course, just because it was a completely new  
977 environment you go to tech school or high school, or even here, and  
978 you're a woman, and for some reason, not a lot of woman want to do  
979 this or are interested..."  
980  
981 I: "Yeah and as you go you see a lot more and more women drop out  
982 too."  
983  
984 S: "Yeah, and I guess, that's like, because people will... 'Studies have  
985 shown that woman have more...literary part minds?' But then even then

986 you must, one of the most pop.... Sorry, this is going off in a different  
987 tangent...”  
988  
989 I: “You’re fine.”  
990  
991 S: “... Some of the most popular authors are men, and so I don’t  
992 understand why women are expected to go into education and literature  
993 and art and then... all these men in history are the famous one’s...  
994 Lewis Carrol...err...”  
995  
996 I: “Tolkien.”  
997  
998 S: “Tolkien, thank you, I was like, who wrote ‘Lord of the Rings’? err...  
999 Frank Peretti, err... Christopher Paul... Eragon series... can’t even say  
1000 his last name.”  
1001  
1002 I: “I don’t even remember what it is off the top of my head.”  
1003  
1004 S: “Yeah I know his first name, it’s like Pauloni, Paulani...”  
1005  
1006 I: “And then, what was it, Lewis Carrol...or?”  
1007  
1008 S: “That’s ‘Alice in Wonderland.’”  
1009  
1010 I: “Yeah, he was actually a mathematician!”  
1011  
1012 S: “Right? And so it’s like, you can do both, women understand this, and  
1013 it’s just, I don’t... Now what was your original question? I got caught up  
1014 in such a tangent.”  
1015  
1016 I: “Yeah.”

1017  
1018 S: "What was it?"  
1019  
1020 I: "It was... think of a class where you had to put a lot of effort to  
1021 succeed in..."  
1022  
1023 S: "Right!"  
1024  
1025 I: "... And describe it to me."  
1026  
1027 S: "APCSP there was only three girls, and I was one of them. There was  
1028 me, [M] and [J] and we sat by each other just 'cause you feel sort of  
1029 isolated when you go to this tech school. And I've done, I would count  
1030 how many men like, when we're walking to the buses, how many boys  
1031 there were versus the females, and I think I've gotten up to, two to  
1032 twenty before, so one to ten. And like that's pretty like, similar to, but  
1033 like, it's just, at first it was isolating, but as you got further in the year, it  
1034 became a little less so because you had to work with each other. But at  
1035 the same time, it's like, this is still new concept and for all these other  
1036 people, even [M] and [J]... I forgot... this was suppo- you don't know  
1037 who those people are." [Laugh]  
1038  
1039 I: "That's okay."  
1040  
1041 S: "It's like, I forgot, it's supposed to be anonymous, but, they have  
1042 prior coding experience."  
1043  
1044 I: "I'll go ahead and move out their names so don't worry."  
1045



1046 S: "Sweet, that's what they had... prior coding experience, and I didn't.  
1047 I was completely new in this, so it was just such a hard concept to  
1048 understand."  
1049  
1050 I: "M-hmm."  
1051  
1052 S: "Cause, like, my creative side of my brain is like, much more  
1053 [Whisper] 'I'm here', and the technical is like [Squeak] 'I'm here too',  
1054 like the person in the back's like, 'Hi', but... I don't know, it's still hard  
1055 for me to completely [click of tongue and adhering hand movement] to  
1056 it."  
1057  
1058 I: "Okay, so you...as you were noticing that maybe put a lot of effort in,  
1059 do you think part of that was just feeling isolated or...?"  
1060  
1061 S: "I think at first it was a part of it, because, it was isolating in the fact  
1062 that both gender-wise and knowledge-wise. Cause you're in this advance  
1063 program and expect to understand this quicker."  
1064  
1065 I: "M-hmm."  
1066  
1067 S: "But for me it's like, it's hard for me to understand, I don't know if I  
1068 reach out, if I'm asking a stupid question or not. And the further you got  
1069 on, you realize, they may have had experience, they also don't know  
1070 what they're doing. Favorite circumstance was when a teacher walked  
1071 over, she looked at a guy's code and she's like, 'That's completely  
1072 wrong, but you're getting the right input, I don't know how you did  
1073 that'. But, so even like the teacher's confused at times, and so once you  
1074 find out that you're no longer alone in thinking,' I don't know what's  
1075 going on', err... then you can start asking more questions and getting  
1076 feedback, cause expecting... I don't know about other engineering

1077 fields, but especially in computer science, you pose a problem, someone  
1078 gives feedback and you're just bouncing back and forth like, until you  
1079 solve the problem. So it's much better to have someone with you... to  
1080 give ideas to solve it. So then you have to like, put the effort into  
1081 actually socializing cause everyone's 'if you want to be an anti-social  
1082 person, do engineering.' That's a lie... "

1083

1084 I: "Yeah."

1085

1086 S: "Society's a liar."

1087

1088 I: "So how did you feel about having to put more effort into that class?"

1089

1090 S: "It was fun. Because... it was finally challenging, you know I  
1091 mentioned earlier learning for me is being challenged, learning to  
1092 overcome the challenge. So when... like you find, like I finally have  
1093 something that my brain can compute, instantly. And it's like, 'Oh, yes  
1094 Okay, let's punch it until I win' [laugh] I'm, like, that sounds really  
1095 aggressive, I'm not an aggressive person no, it's just an aggressive  
1096 thought! [Laugh].

1097

1098 I: "That's Okay, what would you say you got out of that experience?"

1099

1100 S: "More self-awareness? I say that with a question mark at the end,  
1101 'cause I don't completely know what to say I got out of it... 'cause like  
1102 now I understand that, I don't know, I've talked about it with my step-  
1103 dad before. Cause he finds it interesting that I have such... a creative  
1104 mind yet I understand this engineering stuff at the same time. But to me,  
1105 engineering while it is... technical, it is such a creative field as well."

1106 I: "M-hmm."

1107

1108 S: "So, I guess after the challenging, putting all the effort into it, I guess  
1109 I just understood that, I already knew what they wanted, I just didn't  
1110 know that I did. And so now I know that I can actually do this."  
1111  
1112 I; "Okay."  
1113  
1114 S: "Instead of you know, 'cause you know sometimes you still have self-  
1115 doubt. Like when you're looking at a piece of Java, and you just learned  
1116 Java, and you still don't understand, it's like, 'But I've learned this', but  
1117 if you look back on it now, you just needed a few more...  
1118 semicolons..."  
1119  
1120 I: "Yeah, Java was my first programming language"  
1121  
1122 S: "Ooh...Ow!"  
1123  
1124 I: [Laugh]  
1125  
1126 S: "Some people tell me that and they're like, 'We've never dealt with  
1127 Python', like Python is literally the stepping stone to Java, like they're  
1128 so similar, same with C+. You know like they-- I think C+ is a little  
1129 easier than Java, cause if you're wanting an input, you put c parenthese  
1130 in parenthese and if you want output you put c parenthese out  
1131 parenthese, and it's like 'oh, that makes so much more sense!'"  
1132 I: "Okay, so... think of a subject or a class you've taken where you were  
1133 able to succeed without a whole lot of effort, and then describe it to me."  
1134 S: "Every. English. Class. Ever. Period. After. Each. Word. Just... why  
1135 was it easy? I think it goes back to my mom being a reading specialist  
1136 cause even... so I found this out this year, I'm going to share this  
1137 story..."  
1138

1139 I: "Okay."  
1140  
1141 S: "See, this is a story I love sharing with people..."  
1142  
1143 I: "Okay."  
1144  
1145 S: "... Cause it's hilarious to me, in kindergarten, I went to the same  
1146 school my mom was a reading specialist at, so you know, she would  
1147 come and take kids out of my class to go work with them since they  
1148 needed extra help."  
1149  
1150 I: "M-hmm."  
1151  
1152 S: "And you know parents can say, my child like, from knowledging  
1153 like, pre-K they know they have a little more issue or not..."  
1154  
1155 I: "Sure."  
1156  
1157 S: "So... you know, but they still test you within that grade to see if you  
1158 have actually developed or not."  
1159  
1160 I: "Yeah."  
1161  
1162 S: "After the first, so before they do the test, you know my mom' still  
1163 pulling children out and I didn't understand why I didn't get to go with  
1164 my mom, cause she's my favorite person, like, I love my mom. And so,  
1165 I remember throwing fits sometimes, 'cause I just couldn't comprehend  
1166 why these kids got to spend time with my mom and I didn't. But  
1167 apparently, 'cause I got my records back from when I graduated of all  
1168 scores cause they had, so you know, on the kindergarten test they show,  
1169 like your reading test scores. The first test we took, I made really low

1170 on, like I was 5 points below what they expected for us to be at. So the  
1171 school wants my mom there like,' we just think that 'Alice' needs to go  
1172 with you now', and my mom said, 'No, you're wrong', and so  
1173 apparently she talks to me about it, cause the next test score they want us  
1174 to be at 20, and I was at, like really close to 40. So, I've always known  
1175 how to read, I've always been years ahead of reading grade level of like,  
1176 other people in my grade, so I tie reading in with English, 'cause the  
1177 more you read, the more you're learning how... English is supposed to  
1178 'go.'"

1179

1180 I: "Yeah."

1181

1182 S: "So once I first learned, 'This is a noun, this is an adjective, this is an  
1183 adverb, this is how you use comma's and like, blah blah blah blah',  
1184 then I'm just like, 'Okay, I've witnessed this, now I just can put a name  
1185 to what I've witnessed.'"

1186

1187 I: "Sure."

1188

1189 S: "So, I don't need to put effort into that. I can write an essay really  
1190 fast, and that's why I don't care about doing it until the last minute,  
1191 'cause I know I can do it. And so just learning English over and over  
1192 again [Sigh] I'm like it doesn't require any effort and I know some  
1193 people it does. Never, never had to put any effort into it. And I feel so  
1194 bad about it, but I blame my mother [Laugh] 'cause she was like, 'here  
1195 Alice, have a book,' 'Yes, I like this.'

1196

1197 I: "It's like your favorite food."

1198

1199 S: "Yes![Laugh] I brought so many books to college, my sister helped  
1200 me move in, she's like, 'So, how many books are you bringing?', 'Well,

1201 I'm taking 'Harry Potter' of course', so I've brought all the 'Harry  
1202 Potter' books."  
1203  
1204 I: "I had to get another bookshelf this year."  
1205  
1206 S: "Yeah!" [Laugh]  
1207  
1208 I: "'Cause I couldn't fit them all in."  
1209  
1210 S: "I know... like I... she took some of them out so I think... I know  
1211 I've brought 'The Little Prince', 'cause... like, it's a children's book, but  
1212 it's so insightful for adults too."  
1213  
1214 I: "M-hmm."  
1215  
1216 S: "And then I think I brought three other just recreational reads."  
1217  
1218 I: "M-hmm."  
1219  
1220 S: "My sister said when I go back home, I can trade them out and she's  
1221 like regulating how much I'm allowed to have in my dorm room. Which  
1222 I'm glad, I didn't have more room than the books I have but... yeah."  
1223  
1224 I: "Okay, I gather you feel rather just ... you felt rather at the  
1225 repetitiveness of English?"  
1226  
1227 S: "Yes! 'Cause it's like, 'You've learned this last year, why are we  
1228 learning it again?' 6<sup>th</sup> grade, this is what a noun is, that's great, 7<sup>th</sup>  
1229 grade, this is what a noun is, but now there's adverbs. That's great but  
1230 we learned adverbs last year too? But now we're starting with both of  
1231 them? And...man oh man, when we got to freshman year I had a really

1232 close friend who was not on like, the AP track. And he told me that they  
1233 still had to have like a grammar book with them. And it's like, 'You're  
1234 literally a freshman in high school, why are you having to carry around a  
1235 grammar book? And why are you still not getting good grades often? So  
1236 like, I felt bad for saying that, cause maybe that just means he doesn't  
1237 comprehend it, but I knew he comprehended it, let's be honest. He just  
1238 didn't want to put in the effort... effort, it's important!"

1239

1240 I: "So what did you get out of the experience of not having to put effort  
1241 into English?"

1242

1243 S: "I learned that... umm not having to put in effort in English allowed  
1244 me to expand more on... umm... sorry. I think the door is also a  
1245 whiteboard."

1246

1247 I: [laugh] "Okay."

1248

1249 S: [Laugh] "Quite story, so you can see the reflection, like on the door,  
1250 you can see stuff on the reflection on the whiteboard, and you can see  
1251 the scuff marks of like, where they've used a green marker."

1252

1253 I: "And purple."

1254

1255 S: "Yeah, sorry, I just now realized that."

1256

1257 I: [Laugh] "It's okay."

1258

1259 S: "So, not having to put effort in English allowed me to expand on  
1260 when we wrote in English, cause that's something that they can't  
1261 control. Like the teachers can't control, they can't decide what I'm  
1262 putting into it, they just tell me what to expect, and now it's like I can go

1263 expand what you're expecting me to do. So I can use... I can prove that  
1264 I know this and he don't have to keep on drilling it into me. You know,  
1265 with AP courses, you got to read a lot more, and you got to write about  
1266 what you're reading so I've got to do other things."  
1267  
1268 I: "Mhmm... Alright so... think about a student, you know, who puts in  
1269 a lot of effort to succeed. What does that tell you about how smart they  
1270 are?"  
1271  
1272 S: [Pause] [Whispers something inaudible]  
1273  
1274 I: "Well then just think about a hypothetical person"  
1275  
1276 S: "A hypothetical person, I... I don't know, I don't tie in effort, like,  
1277 how much effort you put into something into your intelligence or your  
1278 smartness. I've been trying to avoid the use of the word 'Intelligence'  
1279 [Laugh] this whole time... I'm sorry [Laugh]."  
1280  
1281 I: "It's fine."  
1282  
1283 S: "It's kind of like waiting until you ask me specifically about it, but...  
1284 just because you have to put more effort into something doesn't make  
1285 you any less smart. it just means that your brain isn't coded, in that way  
1286 to understand what you're learning. Or if you're putting more effort in  
1287 because you're excited about it, like the... example that I... like, the first  
1288 thing I said, I just put effort into it because I don't understand, if you do  
1289 understand you're excited, that also doesn't change how smart you are.  
1290 That changes how excited you are for the course. So like, I'm not a  
1291 genius, I just love to write and I hate being told what, like what are  
1292 different parts of speech I'm using when I write, that doesn't mean I'm  
1293 smart, that just means I understand."



1294  
1295 I: "Okay."  
1296  
1297 S: "And like, it's saying... you know, Stephen Hawking, super smart."  
1298  
1299 I: "Sure."  
1300  
1301 S: "But we think he's super smart just because he understood all these  
1302 things, he was able to like, eat it up. And he was able to overcome other  
1303 things people didn't. But kindergarteners are also super smart, because  
1304 they're so creative and they find all these oddball ways to solve things,  
1305 cause no one has told them otherwise yet. Middle-schoolers are smart,  
1306 cause they're starting to figure out what life is. High-schoolers are  
1307 smart, because now they've learned that, now they're learning how to  
1308 apply. College kids are smart, because now they're choosing how they  
1309 want to apply it, what they want to learn. So everyone's smart, but the  
1310 effort you put into it doesn't change how smart you are. I think 'smart'  
1311 is a subjective... smart is as a subjective term as 'beautiful' is."  
1312  
1313 I: "Okay."  
1314  
1315 S: "Like it changes from person to person."  
1316  
1317 I: "So, beauty is in the eye of the beholder but so is intelligence?"  
1318  
1319 S: "Yeah."  
1320  
1321 I: "Okay, so... would that same sort of thought process apply to a  
1322 student that doesn't have to put in a lot of effort to succeed?"  
1323

1324 S: "Like people thought I was smart because I didn't have to put in  
1325 effort, but that's just how they perceived it. 'Cause it's how people told  
1326 them that, it's how it works. Like even teachers, if they know one  
1327 student of theirs succeeds... uh, not succeeds, excels above the rest, like  
1328 sometimes to off... offer ways of encouragement, to say like, 'If you  
1329 need help go to this person', and sometimes they do use the term,  
1330 "'Cause they're smart about it'. But, those other students are just as  
1331 smart, they're just not as knowledgeable as the one who's excelling."

1332

1333 I: "Okay, so since you seem to want me to ask you directly, what does it  
1334 mean to you to be 'smart'..."

1335

1336 S: "I knew that was what was going to happen!" [Laugh]

1337

1338 I: [Laugh]

1339

1340 S: "I mean like, I kind of wanted to... Okay, another thing of honesty...  
1341 I was thinking about how this was going to go, 'cause I've been thinking  
1342 about it ever since I met you at the fair."

1343

1344 I: "Okay."

1345

1346 S: "And I was thinking, 'if she asks me what 'intelligence' is, how am I  
1347 going to phrase this question?' and I sort of already did. Intelligence,  
1348 people say like, 'this person's very much intelligent', and usually they  
1349 tie that in with knowledge or how they perceive as smart. And... but, so  
1350 on the survey, was asking like, if people think intelligence was a base  
1351 thing."

1352

1353 I: "M-hmm."

1354

1355 S: "I don't think it is, because like, just because I am one of those people  
1356 that think intelligence is linked with knowledge. So you can grow upon  
1357 your own intelligence, like, a kindergartener is very intelligent, just not  
1358 about, like just... on a different, like... level of intelligence as Stephen  
1359 Hawking. Cause Stephen Hawking has been able to expand on said  
1360 intelligence and said knowledge."

1361

1362 I: "M-hmm."

1363

1364 S: "But he also had to start as a kindergartener..."

1365

1366 I: "Naturally."

1367

1368 S: ... Yeah, naturally."

1369

1370 I: "How do you just skip being 5 years old?" [Laugh]

1371

1372 S: "Benjamin Button!" [Laugh]

1373

1374 I: [Laugh]

1375

1376 S: "But then again he didn't even skip it, he just didn't start off as five."

1377 [Laugh]

1378

1379 I: "So, it sounds like you're telling me... and just, correct me if I'm  
1380 wrong here. Everybody, literally everybody is smart, they're just smart  
1381 in a different way?"

1382

1383 S: "Yeah."

1384

1385 I: "Okay."

1386  
1387 S: "I don't want, I don't like it when people use the word 'dumb', but  
1388 like, not in a joking way."  
1389  
1390 I: "Sure."  
1391  
1392 S: "'Cause you know like, sometimes I call my sister 'dumb', more  
1393 regularly I call her a 'fool'."  
1394  
1395 I: [Laugh]"Fool!"  
1396  
1397 S: "She's older than me, I want to point this out, my sister's older than  
1398 me but..."  
1399  
1400 I: "I kind of guessed."  
1401  
1402 S: "... Yeah, so like, if she does something that's just, ridiculous. 'Cause  
1403 to me, my sister's one of the smartest people I know, and it's just...  
1404 'cause, she has expanded on so much of this, and like, she... compared  
1405 to other people like I've met her age, she just like has chosen, she has a  
1406 little more knowledge than others. So that kind of contradicts what I'm  
1407 saying smart is a subjective thing, but like to me that's my subjective  
1408 term. But..."  
1409  
1410 I: "I don't think that contradicts what you were saying."  
1411  
1412 S: "Sweet! Yeah!"  
1413  
1414 I: "You've been saying it, matters differently to everybody and this is  
1415 what matters to you."  
1416

1417 S: "Yeah, so like... yeah."  
1418  
1419 I: "Just because I say beauty is in the eye of the beholder doesn't mean I  
1420 can't say, 'I think that's beautiful'."  
1421  
1422 S: "Yeah, like when I first saw the super-computer here..."  
1423  
1424 I: "M-hmm."  
1425  
1426 S: "Oh my gosh, I thought it was gorgeous. It was... Oh my gosh, I just  
1427 want to be a geologist and specialize in petroleum and it started out  
1428 cause I used to drive a lot, since my dad lived in Kansas, I lived in  
1429 Oklahoma. So you know, I'd be travelling a lot over the weekends in the  
1430 middle of nowhere."  
1431  
1432 I: "M-hmm."  
1433  
1434 S: "And you know you saw those like, petroleum factories, and the  
1435 night, I don't know, to me they're just beautiful. Cause you see, there's  
1436 just all these lights, and I don't know, it's a safety reason why there's all  
1437 those lights but... it's just pretty!"  
1438  
1439 I: "That's fair. So... what do you think it means to succeed or fail as a  
1440 student?"  
1441  
1442 S: "As a student overall or as, like, as a college student?"  
1443  
1444 I: "Either way."  
1445

1446 S: "As a student overall... no both ways, succeeding is getting what you  
1447 want out of it, failing is making yourself endure something you know  
1448 you're not going to enjoy... yeah."

1449

1450 I: "Okay, that's not an answer I've received before but that's okay!"

1451

1452 S: "Hmm, Ha! Boom!" [Laugh] [whispered]"I win."

1453

1454 I: "Yes you do... So has there been any class or assignment where  
1455 you've failed to succeed in them?"

1456

1457 S: "Yes."

1458

1459 I: "And do you want to tell me about it?"

1460

1461 S: "History has always been a hard one for me, cause... it's like, so I  
1462 would kind of... I always put myself... compare myself to my brother,  
1463 he's such a history man, like such a history man. I like learning history  
1464 from him, instead of a teacher 'cause he's passionate about it. I like  
1465 seeing the light spark in his eyes when he's telling me about how,  
1466 Thomas Jefferson, no one talks about it but he went and fought pirates  
1467 like quote unquote, "fought pirates", 'cause that was like a scandal  
1468 during the time. And no one knows about that, no one talks about it but  
1469 he's had the free time and the want to go and look for this, and told me  
1470 about it. It's like, 'Ah thank you', he told me about the history of why  
1471 Lawrence and Manhattan has a college but Topeka's the capital, cause  
1472 Topeka was not always the capital of Kansas. Don't know what it was  
1473 before, but now it's Topeka. Like he told me these things because he has  
1474 exceeded fulfilling that want. But when I take history lessons, I more  
1475 specifically like to look at, ancient history, and focus on cultures, 'cause

1476 it's kind of going back to how I like to people watch and observe how,  
1477 what a small thing can trickle within a culture."  
1478  
1479 I: "M-hmm."  
1480  
1481 S: "Like, I don't want to learn about... what's one of the stupidest things  
1482 I've ever learned? ... I don't know, in history there's just so... there  
1483 seems to be so much needless information 'cause they want to tell us  
1484 this 'cause they think it's going to affect how we see the future. And it's  
1485 like, you can't really do that."  
1486  
1487 I: "M-hmm."  
1488  
1489 S: "It's like when they teach you World War I and then World War II,  
1490 they're hoping to avoid a possible World War III. But World War II  
1491 wouldn't have happened if World War I haven't had happened."  
1492  
1493 I: "Right."  
1494  
1495 S: "And so if they're trying to teach us how to look back on the past and  
1496 change the future, then like... during that time it was the present for  
1497 them and... I don't know, there's no like, circumstances of like, right  
1498 now, what happened in World War I that brought upon World War II.  
1499 What's going to happen for World War III to happens isn't going to be  
1500 because someone shoot someone else in the head and then all the..."  
1501  
1502 I: "Everybody gets mad."  
1503  
1504 S: "...Yeah everyone just gets mad...That's not going to happen again, I  
1505 mean it could, but we can't learn... we can't predict that."  
1506

1507 I: "Right."

1508

1509 S: "Like we can't look and like, 'Oh yes, I've learned that Franz  
1510 Ferdinand, this person right now is like Franz Ferdinand. Someone's  
1511 going to shoot him! Like we don't know this. But in like ancient  
1512 cultures, we can use that knowledge to go like, to kind of like, expand...  
1513 like all the ancient technology, we use those premises to build upon. But  
1514 other like, pieces of history you can't do that? So I've always felt like, I  
1515 haven't succeed that much in history just because I don't retain all this  
1516 information, cause I don't find it interesting. Unless it's about like, about  
1517 ancient Greece or ancient Egypt or like, for once I'd like a history  
1518 teacher to teach me about like, the Nordic countries, 'cause no one does  
1519 that, why do we forget the Nordic Countries when Julius Caesar was  
1520 invading all of friggin' Europe? The only time you hear about the  
1521 Nordic countries is when Caesar got up there he was like, 'Alright you  
1522 Scots, [Hits table] gonna take you down', and the Scots were like, 'No'.  
1523 And that's you'll ever hear about then in ancient texts, it's sad. And  
1524 maybe cause we're in America, but c'mon America, teach me some  
1525 Nordic stuff."

1526

1527 I: "Remind me about that later, I have something to tell you."

1528

1529 S: "Ooh, Okay!"

1530

1531 I: "Alright so..."

1532

1533 S: [Laugh]

1534

1535 I: [Laugh] "... Why would you consider yourself to have failed to  
1536 succeed in these classes... history classes?"

1537



1538 S: “‘Cause I didn’t retain all the information that they wanted me to, like  
1539 that’s the one things where it’s repetitive unless they tell me about it and  
1540 it’s like, ‘Oh, I’ve learned this’. But like, until they do, I don’t remember  
1541 it, and to me, that’s sort of failing, cause I’m failing my own  
1542 expectations of what I was supposed to learn in the past year.”

1543

1544 I: “Okay, so... what did you do when you realized that history was  
1545 difficult for you and was there any outcome of that reaction?”

1546

1547 S: “I fell in love with Hamilton the musical, ‘cause you know, I am such  
1548 like a musical person, like music makes sense to me. So now there’s  
1549 history, American history which I usually don’t like...”

1550

1551 I: “M-hmm.”

1552

1553 S: “... But in a musical sense, and I love musicals, I like theatre nut! So  
1554 having it in this new environment presented to me in a new way, helped  
1555 me like expand and realized there are musicals based upon American  
1556 history.”

1557

1558 I: “M-hmm.”

1559

1560 S: “They were, as in like, yes, not all the information about Hamilton  
1561 was correct, but I know that because I wanted to know why this  
1562 happened in this character’s life. So I went and researched it and now  
1563 that I was able to apply it to something that I adore, and it helps me...  
1564 and then like, I guess like my brother whenever he teach... tells me  
1565 something about history cause he’s so passionate...”

1566

1567 I: “Yeah.”

1568

1569 S: "... about it"  
1570  
1571 I: "So do you think you've learn from Hamilton than from a class?"  
1572  
1573 S: "Oh yeah [Laugh], don't tell my past US history teacher that."  
1574  
1575 I: "Well give that I don't even know who he is..."  
1576  
1577 S: "Yeah, I mean... Figuratively..."  
1578  
1579 I: "And did you learn anything from that experience?"  
1580  
1581 S: "I mean I learned a lot more Alexander Hamilton!"  
1582  
1583 I: "What advice would you give someone who's struggling with a  
1584 similar situation?"  
1585  
1586 S: "Find a way that works for you, because when teachers are teaching  
1587 something, they're usually teaching it in a way they seen has worked for  
1588 a larger group than for an individual. So you take what you can  
1589 understand from that teacher, and then apply it in that new way. There's  
1590 this movie... somewhere where this group of people try to help their  
1591 friend, get like, a US citizen card..."  
1592  
1593 I: "Oh, citizenship."  
1594  
1595 S: "Yeah, citizenship, and he couldn't remember all this information,  
1596 you know, that was supposed to be on the test."  
1597  
1598 I: "Sure."  
1599

1600 S: "So one of the girls sat down with him and is like, 'What do you like  
1601 most?' At first he was confused cause he thought she was talking about  
1602 military history itself, but she's like 'No, forget this, what do you like  
1603 most?' and he said music, and specifically rap, cause that's his sort of  
1604 style. So she applied the knowledge that he had, like, he was given to  
1605 like, a rap type setting and then he passed it with flying colors."

1606

1607 I: "Right, 'cause then he had something that he was interested in."

1608

1609 S: "Yeah."

1610

1611 I: "Okay. That makes perfect sense. Okay so how about a specific  
1612 subject or class or assignment that you think you really succeeded in?"

1613

1614 S: [Pause] "I did really well at my first semester pre-calc class cause I  
1615 had a lot of fun. 'Cause I wrote oddball answer such as the asymptote is  
1616 the forbidden lover of the graph [Laugh] but... I'm trying to think of  
1617 something that I'm especially proud of in my academic career. It's hard  
1618 for me to think back because you know, I have such... like, the moment  
1619 like, it's such in the moment, then later on I don't care enough to be  
1620 prideful about it."

1621

1622 I: "M-hmm."

1623

1624 S: "Oh, I think one of my proudest moments, that shall ever be one of  
1625 my proudest moments was I... when we got the new choir director, I  
1626 understand music theory, not like music theory, I don't know all the  
1627 terms in music theory. Don't ask me about music theory! [Laugh] But, I  
1628 understand music enough looking at a graph cause I both do choir and I  
1629 also played an instrument in elementary school, but like, I can  
1630 understand like, it's always clicked in my head. And so, it came to the

1631 point where if my choir director is asking any questions, she wouldn't  
1632 let me answer anything, 'cause I would always answer it, 'cause I  
1633 always knew the answer. So finally, one... she thought I was a band  
1634 student in her first year, so she said, 'Band students are no longer  
1635 allowed to answer' so she asked the next question and I rose my hand  
1636 and she's like, 'I just said this' and I was like 'I'm not a band student'.  
1637 So then it became 'Band students plus Alice', it'll just be the altos two  
1638 section because everyone else was a band student..."

1639

1640 I: [Laugh]

1641

1642 S: "... And it carried out throughout the whole high school year, like, at  
1643 the beginning of the year, she'd forget, but then it came to, like if she  
1644 saw my hand up and she'll go like, [Sigh], look away..."

1645

1646 I: [Laugh]

1647

1648 S: "... So I like how I had that effect on her, just cause... why not?"

1649

1650 I: "Why not?"

1651

1652 S: "Choir directors are always easier to become friends with, I think...  
1653 'cause they always try to connect more sense with music in such a...  
1654 root thing. So it's fun to be sassy."

1655

1656 I: "So why do you think you succeeded in there?"

1657

1658 S: "Music makes sense, music is... has always been the same, like  
1659 there's gonna be... at least the first time you reach this point where no  
1660 piece of music will be completely individual. Cause a sequence of notes  
1661 has already been played before, like in some, either in ancient music or

1662 recent piece of music. But it's same in that context, but it's same but so  
1663 vastly different. And I think that's the only... that's the best way to  
1664 explain it, it means so much more to me. Like music is just... Have you  
1665 ever seen 'August Rush'?"

1666

1667 I: "Yes."

1668

1669 S: [clap] "That. That's why. August is one of like people I've ever  
1670 related to most within a movie setting. Cause he also couldn't put it in  
1671 word, but he under, like I understood how he felt. Like my parents didn't  
1672 meet the music, no one else in my family's musical..."

1673

1674 I: "M-hmm."

1675

1676 S: "... But like, it clicked his brain the same way it clicked for me."

1677 I: "M-hmm, Okay, and would you say you've learned anything from the  
1678 experience of just being successful in music?"

1679

1680 S: "I found it's fun to teach people music, cause most people realize  
1681 that you are successful and they come and ask you questions. And I find  
1682 it really fun slash interesting to sit down with them, ask them what they  
1683 do understand. Because often times they're overcomplicating it, cause,  
1684 like, people who are passionate about it would start conjuring up all  
1685 these technical terms where in reality, music is such a simple, yet  
1686 complex thing. But it's simple first, so I... I don't know, I love teaching  
1687 people it, cause seeing that click in their brain and then them going, 'Oh'  
1688 and then go and push that through... that knowledge further, that, that's  
1689 successful."

1690

1691 I: "Okay."

1692

1693 S: "I like seeing the joy in people's eyes."  
1694  
1695 I: "So, do you think you learn more from an experience that's  
1696 challenging or not very challenging?"  
1697  
1698 S: "Challenging... cause if it's not challenging, it's usually, I'm learning  
1699 about how other people are perceiving it and what's challenging for  
1700 them and I'm learning how I can teach it to them. But, so I'm more like  
1701 self-discovery, but I'm learning more about a thing that challenges  
1702 myself, cause I'm expanding further, like, all...knowledge-base instead  
1703 of just self-awareness. And I think, I can push myself more only so far  
1704 until I start realizing that there's common trends. But with knowledge,  
1705 there's just infinite things I could learn. Sadly the hippocampus is only  
1706 so big so someday I'm gonna lose it, until that happens, I'm happy just  
1707 learning and learning."  
1708  
1709 I: "Does it matter to you if you succeed through that challenging  
1710 experience?"  
1711  
1712 S: "I mean succeed... like I said before, succeeding to me is learning so  
1713 yeah, it matters to me if I've learned or not. It matters to me if I've  
1714 succeeded in learning, 'cause if I haven't then... something's wrong."  
1715  
1716 I: "What was the point?"  
1717  
1718 S: "Yeah. What was the point?"  
1719  
1720 I: "So, now that we've talked about all these different ideas related  
1721 motivation, effort and challenges, how would you summarize what  
1722 you've shared with me?"  
1723

1724 S: "I like Music. [Laugh] I like music, I hate mystery, err... history and  
1725 nouns. But no, seriously, I'm hoping I've pushed across the fact that you  
1726 can't set a defin... there's of course a definition of 'intelligence' and  
1727 'knowledge' and... 'smart', but in reality it's different for everyone,  
1728 cause everyone is so different. They learn different, they think different,  
1729 they look at the world differently, be it like, in a literal sense or  
1730 metaphoric sense. But, everyone's just so different, and when I was  
1731 taking that survey, it's like, 'How can we know?', if, even if intelligence  
1732 is a set thing, because intelligence can be so subjective. I mean like,  
1733 artificial intelligence, that's very objective thing, cause we're saying  
1734 intelligence is the prob... is... the definition of that intelligence is being  
1735 able to think and conceive your own thoughts. But everyone else, is  
1736 already doing that and just at the rate or the amount that they're able to  
1737 do is... themselves, and not something you can tell them. History... Oh  
1738 that's something we've learned in history, people have tried doing that,  
1739 it doesn't work. People revolt so hard! Social classes, French  
1740 Revolution, they said no, so..."

1741

1742 I: Okay, have you gained any insights from our discussion?"

1743

1744 S: "Hmmm, yes and no, but not the kind of insight you're probably  
1745 asking about. I like seeing what you write down..."

1746

1747 I: [Laugh]

1748

1749 S: "... So like, my insights are how you're perceiving my own thoughts,  
1750 so... I felt so like, been noting like, you're enjoying this, So I'm glad  
1751 you're not like, researching something cause you need to research  
1752 something. It's nice to see that you're actually excited. You're also  
1753 thoughtful, like when you put 'laughing' you're also laughing and if I  
1754 was like exasperated, you're also understanding, cause you're also in

1755    Advanced English, like why teach nouns? I always say nouns cause  
1756    nouns is a recurring thing but...”  
1757  
1758    I: “Yeah, sure. Okay, that’s pretty interesting actually.”  
1759  
1760    S: “Oh, thanks.”



1     **Interview Transcript 2: Brian**

2     Interviewer: Allison Adams

3     Date Interview conducted: 09/06/2018

4     Transcribed by: Dong Ren

5

6     Interviewer: “Our goal today is for us to have a detailed discussion about  
7     your beliefs or perceptions of your own intelligence. This discussion  
8     will inform my understanding of the perceptions of engineering students  
9     and will help future decisions about the undergraduate engineering  
10    experience and how it can be improved for all students. I want to hear  
11    your own thoughts and perceptions, I’m expecting that they’ll be  
12    different from the thoughts of others, there’s no right or wrong answer, I  
13    want to know what you think, not what you think I want you to think...”

14

15    Student: “Gotcha.”

16

17    I: “... I aim to understand your perspectives so I’ll ask questions like,  
18    ‘What do you mean by that?’ and ‘Can you elaborate?’ These questions  
19    can end up being a bit awkward and may require you to reflect on your  
20    experiences, so I’ll just leave purposely long pauses after my questions.  
21    Take your time and if you need clarification, let me know.”

22

23    S: “Alright”

24

25    I: “Any further questions?”

26

27    S: “Ah nope, none so far”

28

29    I: “Alright, would you tell me about yourself as a student?”

30

31 S: "So I major in Computer Science right now, I'm taking part in  
32 different engineering clubs as well. Right now I'm in Video Game  
33 design, the [club name] thing, err... I don't remember the exact name  
34 but it's like 'Network Defense' or something like that. And then I'm  
35 also taking part at different activities at [church] all just kind of  
36 broadening my horizon and also group of friends. My main focus as a  
37 student though is to study computer science for Virtual Reality  
38 Technology especially with mental health in mind, or using technology  
39 in that regard. Kind of results from a family's background with dementia  
40 and trying to find a way that I can use my interest and benefit others."

41

42 I: "Alright, so... if you were describe yourself as a student using  
43 adjectives, what would you describe yourself as?"

44

45 S: "'Hard working' is one that comes right away to mind, and then err...  
46 'Determined' or 'Focused' would be something, 'cause I don't always  
47 understand what's going on but I'm always willing to keep trying to get  
48 it. Err... [Snaps fingers] I don't know the right word but it's just wanting  
49 to learn as much as I can, I can't think of a word for that."

50

51 I: "So, when you said you were a 'Hard working' student, what does  
52 'Hard Working' student mean to you?"

53

54 S: "Willing to put a lot of hours and potential free time just to  
55 understand the material and free confident about work. Like, even  
56 though it's the first few weeks of college, I've already put in more time  
57 than probably some people I know. And that does mean I lose a lot of  
58 chance to hang out with people but I also get the ability to feel confident  
59 in what I do and what I produce as work."

60

61 I: "Alright, how about, what do you mean by a 'Determined' student?"

62

63 S: "I'm kind of so hard working that there's a lot of things I don't  
64 understand especially in terms of programming knowledge, but I'm  
65 willing to kind of hash out in my head and figure out where I'm going  
66 wrong and pretty much... I look at where I'm struggling and figure out  
67 how to get around it and figure out where it's going wrong. Try find a  
68 different solution even if it's not fun. [Laugh]"

69

70 I: "So, how about 'Focused'? What does a 'Focused' student mean to  
71 you?"

72

73 S: "Able to... even if it's something doesn't interest them, they're able  
74 to just hone in on that one aspect or one assignment and make that their  
75 priority for X amount of time, so they can pretty much be done with it  
76 once it's over."

77

78 I: "Okay, and a student who wants to learn things, why... what does that  
79 mean to you, what does that look like to you? Why do you say you are  
80 that? Could it mean something different to someone else?"

81

82 S: "In my regard it's kind of, I don't want to just learn technical skills, I  
83 want to learn art, networking, like, both the actual internet and  
84 professional skills and pretty much anything and all I can in college and  
85 like psychology. So to me that kind of just like using all the energy I  
86 have to make more of a well-rounded of knowledge instead of being  
87 like, 'I am the best at one thing'. So even though it's like I'm not...I'm  
88 not planning to be the best at one skill, but decent at many skills."

89

90 I: "Jack of all trades, master of none, but better than being a master of  
91 one?"

92

93 S: "Yeah."  
94  
95 I: "Alright, so let's say you're in a class and you succeed on an exam,  
96 how would you react and why?"  
97  
98 S: "My reaction in class would kind of just be, if it's a really good grade,  
99 I would try to keep it on the down low, to feel really proud of myself.  
100 Mainly because I know, if someone sees like, 'Oh, he did better than I  
101 did, I'm not going to talk to him', I try to avoid that sort of interaction.  
102 But once I get out of class I'll talk to my friends, they're people I can  
103 actually trust like, 'Hey, I'm super pumped about this'. Or even I think, I  
104 did awesome on this test, I can take a little bit of time to just enjoy a TV  
105 show or a video game. So I'm very happy with myself, I try to keep it  
106 like, not prideful, too prideful."  
107  
108 I: Okay, so on an exam, what do you consider to be a 'success'?"  
109  
110 S: "Better than what I expect going in. So like, I could go to a test  
111 thinking, 'I have not prepared for this at all, I am probably going to get a  
112 'C' or 'D'', but if I do even slightly better than that I figured that's a  
113 success in some regard. I mean I always try to do the best I can, but  
114 reality is I'm not going to be perfect at everything so, I just try, if it goes  
115 as well as I expected or better then I'm happy with myself."  
116  
117 I: "So if it's your... if it's based upon your expectations, do grade curves  
118 ever factor into what you consider a 'success'?"  
119  
120 S: "It kind of depends 'cause, I mean in comparison with others, I still  
121 did fine. But with grade curves it also reaffirms that, 'Hey, it's Okay,  
122 you didn't get this, others people were struggling too.' So a grade curve

123 isn't necessary a bad thing in my head. It's just like, 'Oh you need to  
124 work on this more'."

125

126 I: "Alright, so... when you got your test back, let's say the person next  
127 to you, you consider to be really smart, way smarter than you are and  
128 you happen to glimpse their score and see that you did way better than  
129 they did on the test. How would you feel? [Cough] Excuse me"

130 S: "It's kind of like the same with the first reaction, I'll feel good about  
131 myself, and then I wonder... part of it I also wonder what could have  
132 played into their experience with that. Like what... why would someone  
133 who's like, perceived as better than me at this subject in pretty much all  
134 regards, what would cause that to happen? But in the end it's still that  
135 sort of, 'Yeah, yeah I did good', that sort of reaction."

136

137 I: "So when you find out that you have done better than... smart person  
138 B, would you share that with other people?"

139

140 S: "No, I would choose not to because in the end, like it kind of goes  
141 back to I don't want people viewing myself as like a grade or expected  
142 student so... I wouldn't want that applied to another person. 'Cause in  
143 the end, I focus on the idea that I may be good at say math, but  
144 someone's going to be much better at science than me. So there's no  
145 point in kind of holding that one test or grade above someone."

146

147 I: "Okay, how would you react if... that wasn't just a one-time thing,  
148 you're consistently doing considerably better than they are?"

149

150 S: "Personally I would feel more confident in my own abilities, but it  
151 still kind of goes to the, I wouldn't want to make someone feel bad  
152 cause they're struggling. 'Cause that doesn't help anyone but if it's like  
153 something... there's been times it's like, I know this, I can understand

154 something better so I try to like, lead them in the right direction to  
155 understand at least how I do, but... I'm not a teacher for a reason so...  
156 [Laugh]"

157

158 I: "Yeah, would you ever tell someone that you knew that the  
159 information shouldn't, wouldn't get back to this other person, like, I  
160 don't know, say, your mother? Since she doesn't go to school... here."

161

162 S: "So would I like, call my parents and say 'Hey, I did good'?"

163

164 I: "Err... more like, if you just happen to meet with your parents for  
165 lunch or whatever and they say, 'How's it going in class?', 'How's this  
166 one class going?', would you ever mention that?"

167

168 S: "I would mention the doing good on a test that or something that I  
169 thought I was going to struggle on, but I won't mention the other student  
170 part."

171

172 I: "Okay"

173

174 S: "'Cause, that kind of falls into what I said with, they're someone I  
175 trust, won't go around be like, 'Hey, this person said you did this'"

176

177 I: Mhmm."

178

179 S: "So... yeah"

180

181 I: "Alright, Let's say you failed to succeed on an exam, how would you  
182 react and why?"

183

184 S: "So my like, instant reaction would be like, 'Whoa, oh crap, where  
185 did I go wrong?'. And then, kind of bummed for like, probably an hour  
186 to half a day maybe, but then it... part of my mind it'll be like reality  
187 would kick in, where it's like, 'You just gotta get back to it and figure  
188 out where you went wrong' and like, even I've talked about, 'Hey I need  
189 tutoring or something cause like, admitting you're struggling with  
190 something is probably the biggest step in improving.'"

191

192 I: "Alright, so... what if the other students in the class did way better  
193 than you did, like you saw it on one of those...just score distribution or  
194 whatever"

195

196 S: "Okay, so my first reaction would be talk to whomever was in charge  
197 of the test and be like, "Hey I understand that this is happ... this is what  
198 I got, can you at least explain why it was like that?", 'cause, I mean...  
199 I'm not in the truth, unless it was something blatant, like, obvious that it  
200 was just a mistake, I'm not in a place to truly argue it. I just would want  
201 to understand where it went wrong."

202

203 I: "Okay, so... what if, a not smart person C sits on your other side and  
204 you just didn't think they were very smart, not as smart as you by any  
205 means. What if they did better than you did on that exam?"

206

207 S: "I mean in the end, it'll be what it is, not like, it makes me question  
208 my own ability but, it kind of make me think, "Okay, I just need to step  
209 up to the next project or next assignment and put in more effort than I  
210 did if I can' or just seek more help from other people cause they  
211 probably have the knowledge I'm missing..."

212

213 I: "Okay"

214

215 S: "... Or like say, explanation for this major subject... that isn't like,  
216 clicking in my head."

217

218 I: "Alright, so... would... what would you... how would you feel if this  
219 happened again and again and this person consistently got better exams  
220 than you did?"

221

222 S: "I would probably go to them for help to be honest [Laugh] I mean, of  
223 course there's going to be people I can't really mesh with personality-  
224 wise or just don't get along with, but if I see they're going to be doing  
225 this, say they're doing great in English, I'd be like, 'Hey, what's your  
226 secret?' Or 'How are you doing this? Could you help me out or at least  
227 look over this and make sure I'm on the right track with it?' Cause...  
228 sure people are probably going to someone in every class that's willing  
229 to give someone trouble just because they think they're better but, it's  
230 college, you're here to learn not prove you're better than someone."

231

232 I: "Sure, would you share with others that you didn't do as well as that  
233 person?"

234

235 S: "Depends on the person I would say."

236

237 I: "Alright, who then?"

238

239 S: "If it was like a close friend or someone like that I'd be like, someone  
240 that I knew and could trust wouldn't instantly turn and suddenly the  
241 whole class knows that I'm struggling, then I would talk to him and be  
242 like, 'Hey, where'd get this information' or 'How'd you figure this out  
243 cause, it made no sense to me' but, I'd say someone that you know, just  
244 won't help at all, then I would probably go to someone else, say like a



245 professor instead of that person, cause they're... it may just cause a  
246 conflict in the end.”

247

248 I: “So, you would go to someone if you felt that, going and telling them  
249 what’s going on would help you improve. Why wouldn’t you go to  
250 someone who wouldn’t affect the outcome in any way?”

251

252 S: “For me it’s just kind of just, you only have so much time to  
253 understand something or to get it, so why spend time trying to get like,  
254 say that person that hates you for some reason to get them to give you an  
255 answer? Or something like that. You aren’t going to get much out of that  
256 however long you spend instead of just spending that time just going to,  
257 someone would be willing to help or is just on better terms with you.”

258

259 I: “Okay... so... does it matter to you if your peers or your professors  
260 think you are smart?”

261

262 S: “Not really I would say, I get that being considered ‘smart’ is good,  
263 but I prefer more... people base me more on work ethic instead of  
264 intelligence. ‘Cause in the end I feel like the person who is able to work  
265 better, put the most effort in and truly care about what they’re doing, is  
266 going to get further than someone who is book-smart per say.”

267

268 I: “Okay... so tell me about what motivates to keep pursuing an  
269 engineering degree?”

270

271 S: “A lot of is, I’ve always been interested in video games and art and  
272 stuff like that, that’s how... this course sort of started. I jokingly told my  
273 mom I wanted to do video game design, and then I through a program in  
274 high school, I was able to get experience with VR, and realize that is the  
275 perfect thing to get what I want to do to help people in life. I just...

276 didn't want to be the person helping people by staying on the internet. I  
277 want more the, 'I see the result in person' sort of job. So that led to me  
278 wanting to work with VR and mental health. Especially cause ... big  
279 part of what drives me is my family's past, 3 of the 4 of my grandparents  
280 have had dementia of sort. So I'm doing my best to make sure that  
281 doesn't happen to as many people as I know. So yeah, that idea of I can  
282 make a big difference down the line is kind of what pushes me when I  
283 start struggling."

284

285 I: "Why do you think your drive to make a difference motivates you to  
286 pursue engineering?"

287

288 S: "It just, it kind of fits with what I did well within school and also kind  
289 of the interest of... the technology side of engineering and I've... I was  
290 always, at least decent at math."

291

292 I: "Mhmm"

293

294 S: "So it seemed like a good fit, so... it's kind of just a culmination of  
295 all those things."

296

297 I: "Alright, so if you were to make a pie chart of your motivations as a  
298 student, what percent would you say you're motivated by your grades,  
299 versus your desire to learn the subject?"

300

301 S: "So it's only those two things in the chart or...?"

302

303 I: "Well, I think you have something else you really want to put in there,  
304 there's room."

305

306 S: "Alright, so compared to grades, desire for knowledge and what else,  
307 correct?"

308

309 I: "Yeah"

310

311 S: "Okay, grades I would say is probably 30 and then, or maybe like 25.  
312 Not a major, like overpowering but a good amount."

313

314 I: "Mhmm."

315

316 S: "But a lot I would say, half or more would be to the 'desire to learn  
317 more' cause, and the rest would be goals for the future. But I mean my  
318 logic with college was, I'm not going to be perfect at everything or be  
319 able to say I can be the first like, dancing, painter that's an engineer or  
320 something like... some crazy combination like that. But I kind of just  
321 wanted to hone as many skills as I could with that, and I know I'm not  
322 gonna... I'm probably going to take an art class and get a 'C' to be  
323 honest [Laugh] or lower. But... I mean as long as I learn something  
324 from that experience and I can take the benefit later on in the world."

325

326 I: "Okay, so would you say that that pie chart of motivations hold the  
327 same for all your classes?"

328

329 S: "A lot of them, yes. English is one that's kind of like, that grade  
330 matters a lot, about half and half. 'Cause, I know English is important  
331 but I don't see me writing like, really long papers, frequently at least in  
332 my future but I guess it's important. So, classes that I don't... that I'm  
333 forced to take and don't interest much in, it... the grade because more  
334 important, but there's still something I can apply from them like a way  
335 of thinking."

336

337 I: “Okay, so in what ways are your grades important to you?”

338

339 S: “In some respect they’re a motivation to keep working, but, with that

340 said, that’s kind of a visual representation of how much information

341 you’re getting in and not... so, I may understand something great and...

342 in my head be able to explain some great idea and not show it on paper

343 as well, I get that effect and so... if the grade is high in that class that

344 means awesome, I can put it on paper perfectly. But if it’s not then, that

345 kind of just serves as ... show that I need to figure the idea out more my

346 view of something. So it’s more just a visual representation of, ‘Do you

347 get the basic idea at least?’”

348

349 I: “Okay, and in what ways is learning important to you?”

350

351 S: “It’s kind of... hmmm [Laugh] Sorry, that’s an interesting question.

352 So I kind of want be able to have as much knowledge as I can for every

353 situation that I could... for more situations that I’m gonna need. Like, I

354 could... I hope in one day, be able to work on a project and know I

355 could do, almost every aspect but not have to if that makes sense. And

356 like, if it comes down to it, I can help other people with parts, that’s kind

357 of why I want to learn how to do. So learning as a whole is just...

358 teaching yourself how to be prepared for a position where you may have

359 to take on another load or help another person with certain aspect, more

360 just preparing for the future than the present sort of idea.”

361

362 I: “Okay, so... let’s say you have a core course required for your major

363 and when you’re looking at enrolling times both work for you, and you

364 have two options of professors to take it from. You have professor one

365 where, it’s going to be really hard to succeed in his class from his

366 reputation at least anyways, but you’re likely to learn a lot, or professor

367 two, where it's a lot easier to succeed but you most likely won't learn as  
368 much in the class. Which professor would you choose and why?"

369

370 S: "Honestly I would probably go with the more difficult professor if I  
371 knew all that information up front. Cause at least, especially with  
372 college, if you're not getting anything from a class you're throwing  
373 money down the drain pretty much. So that kind of goes against the  
374 whole idea of getting as much knowledge as I can in this... hopefully  
375 four year span. [Laugh] Ah so, again would be more difficult, but I feel  
376 like I would get more from it or at least some new perspective or new  
377 way of looking at life. And that would be more beneficial than sitting in  
378 class, potentially mindlessly."

379

380 I: "Okay, can you think of a situation where the answer to your question  
381 might change?"

382

383 S: "Part of it would depend on what the required class is, like if it's  
384 something that I know if you go, like, 'harder' per say is just you get  
385 more work instead of more perspective or knowledge, then I would  
386 maybe go with the easier if you got that... sort of insight. But it also  
387 depends on, cause like... public speaking for example, I know I took  
388 that on knowing it would be more work and the version I took, I took  
389 that one knowing it'll be more work, more information like be forced to  
390 learn new practices and insights, but if it was like for English say papers  
391 are graded harder and you're not given an explanation why, then that  
392 might change my choice."

393

394 I: "Okay... So... tell me about your learning and studying strategies."

395

396 S: "The one I've used a lot lately is I've been writing a list of the most  
397 important thing like it's due tonight or tomorrow and then stuff I would

398 want to get done if I had more time. And then I just either sit in a quiet  
399 space and throw some music on or in my room, and turn something to  
400 block all the noise out and then I just knock out as much as I can, in that  
401 amount of time, sometimes it depend on what I find more interesting in  
402 that order but I just go with the mindset of, ‘Okay, I’ve got to get this  
403 done by say, 3 O’clock, this done by 4.’, and then, I try to build in time  
404 to be like, ‘Okay, I can just watch a movie or something this break, time  
405 for a mental break’.”

406

407 I: “Okay, so how did you come to use these strategies?”

408

409 S: “Part of it is sort of developed during high school, when I realized  
410 that I can still be in clubs and do everything that I want, as long as I  
411 force myself to sit down and put in the time. So I would do theatre until  
412 like I think it was 7 at night, then I would go home and immediately  
413 from like, 8 till however long and I realized hey, this is actually good at  
414 getting stuff done so I kind of add the music part and noise to block... to  
415 kind of block out my own mind sometimes from distractions like, ‘Oh,  
416 I’m feeling like watching a movie right now’, block out that sort of stuff,  
417 so it’s easier to focus on what I’m looking at right there.”

418

419 I: “Okay, how would you say that these strategies have changed over  
420 time?”

421

422 S: “The amount of the time I can put in focusing has increased with it,  
423 kind of like practicing a sport almost. And then plus I’ve learned what  
424 kind of noise is beneficial to it like, smooth jazz for some reason works  
425 really well for studying or just the noise of a fan, something that sounds  
426 decent but not distracting instead of say, hard rock or a pop song.”

427

428 I: “Yeah, those would be distracting!”

429  
430 S: [Laugh]  
431  
432 I: “Would you say that you’ve needed to study more as time went on?”  
433  
434 S: “Yes, but that’s because of growing up, more difficult classes,  
435 college, that sort of thing, not harder to learn the material at least to this  
436 day, I may could very well get one day where it’s like, ‘Alright, I’ve  
437 spent 10 hours on this cause I’ve no idea what’s going on.’” [Laugh]  
438  
439 I: “Generally speaking, how much effort would you say you put into  
440 your classes and why?”  
441  
442 S: “At the very... with college classes at least that... at least that  
443 stereotypical 2 to 3 hours. Part of it is because we were told that also  
444 another part is that it’s actually how long it takes me cause sometimes I  
445 work slower per say, compared to like someone else, and that’s just  
446 because I wanted to focus on the detail, I want to get it right first time.  
447 So, but on a normal day to day basis, probably 4 hours of homework or  
448 studying at least just in between classes or at night.”  
449  
450 I: “Okay, so how do you connect that time you spend with the amount of  
451 effort you spend?”  
452  
453 S: “Sometimes, it may just be a really long assignment or something that  
454 takes a little less mental energy like you have to read out of a textbook  
455 or you have to read these five chapters, that’s something that requires  
456 less effort I would say, compared to, ‘Okay, I have to finish an English  
457 paper that has to be like, 7 pages.’ That takes my full focus and attention  
458 that more effort that I have to put in, in that same amount of time, cause,

459 I got to think through each part of what I'm doing instead of just, 'Oh  
460 yeah, that's a sentence'." [Laugh]

461

462 I: "So do some of your classes require more effort than others?"

463

464 S: "At this point, definitely English, and... public speaking I would say,  
465 that one takes a good amount of effort, cause... writing the speech is  
466 easy but being able to go up there and have it memorized is the hard  
467 part."

468

469 I: "I was frustrated with that class too, although I had more problems  
470 dealing with my peers than the actual subject matter." [Laugh]

471

472 S: "Yeah, that class can be very hit and miss depending on the class."

473

474 I: "So do you feel like you learn more from classes when you have to  
475 put more effort in, as opposed to a class where you don't need to put in  
476 as much effort?"

477

478 S: "It could depend on the subject, like the amount of how quickly I  
479 understand it or it could just be that I sometimes, it's made easier effort-  
480 wise if I find it super interesting or I can instantly think, 'Oh this is how  
481 it connects to this'. But when it's like, I have to force myself to see those  
482 connections instead of being obvious, it's a bit more difficult."

483

484 I: "So would you say your interest level decreases the amount of effort  
485 necessary in class? Or just makes it easier to want to put in that effort?"

486

487 S: "It may not decrease the amount of effort, but make it feel like less at  
488 least, it could still be the same amount of attention to detail and stuff,



489 it'll be much easier to do it than if I have to read the same paragraph for  
490 the tenth time because I missed the meaning in it."

491

492 I: "Do you feel like you put in more or less effort compared to your  
493 peers?"

494

495 S: "at this point it's hard for me to make a definite statement, but say in  
496 high school I definitely put in more effort especially when it came to  
497 just, attention to detail or willing to put in the time. But in college, I  
498 want to say I think that, but I haven't been around enough to be for  
499 sure."

500

501 I: "Sure, how did you know that you... were more willing to put in  
502 effort than your classmates in high school?"

503

504 S: "Part of it was just being around them while we were working on it, I  
505 would, like we get the chance to work on something in class I would  
506 actually be like, going through, rechecking something while they would  
507 be chilling on their phone per say."

508

509 I: "Okay, think for a moment about a subject or a class or something,  
510 where you had to put in a lot of effort to succeed, describe to me that  
511 subject or class and what it looked like."

512

513 S: "So my senior of high school I... it was sort of a class slash program  
514 that I took part in called [name]. When [part of name] stands for  
515 [acronym, contains 'Professional Studies']. It was... the group I was in  
516 was half technology focus, half business skills."

517

518 I: "Mhmm."

519

520 S: "The... that class took a lot of effort and focus of my senior year,  
521 because the business skill was being able to go up in front of people and  
522 be like, 'I can present an idea even if I don't fully understand it that  
523 part', came across relatively easily. The technical skills though is the  
524 difficult thing 'cause we would have projects that actually mattered that  
525 had impact on the business. And I would have to, and I was with people  
526 that are way past me, so I would have to put in a lot of effort and time  
527 just to catch up and understand what they're saying cause I learned just  
528 how much jargon there is with technical details. So I would... that one I  
529 would put in much more effort than I did for any other normal high  
530 school class cause... the big thing with it was, you had to teach yourself  
531 this stuff. Sure we'll help you with it but you have to take your own time  
532 and effort and figure this information out. So that was definitely the  
533 most brutal class I took."

534

535 I: "Okay."

536

537 S: "Definitely fun in the end though!"

538

539 I: "So how did you feel about having to put a lot of effort in?"

540

541 S: "Initial reaction was a bit of panic, when I realized how far I was  
542 behind or, how quickly I would have to learn everything, but... then it  
543 just kind of was like, 'Okay, I got... this was the reality I built for  
544 myself, I got to deal with it'. So I went and like, I would talk to the  
545 people that seem like they understood and be like, 'Hey, where's a good  
546 place to get this information?' Or, 'How'd you learn this?' And then I  
547 would take a few hours outside that class to start learning the basic  
548 knowledge, so I could at least learn to read what way they were doing it  
549 thinking it wasn't in like, Latin." [Laugh]

550

551 I: "At the end did you feel like your... feelings about that effort  
552 changed?"

553

554 S: "In some respect it because easier to focus on it, until like, I  
555 understand it because I can see the pieces falling into place. But in terms  
556 of... difficulty, it actually kind of grew as my knowledge grew, and  
557 more stuff would be thrown on top of it. I mean, leaving that class, I still  
558 knew I wasn't anywhere near their skill level... the other people in the  
559 class but... I felt more confident in myself and that I was able to... fit  
560 into that group almost and prove that I can learn this stuff myself at least  
561 in some respect."

562

563 I: "So what would you say you got out of that class?"

564

565 S: "How to work on my own and learn on my own almost, 'cause that  
566 was the biggest aspect you had to teach yourself the information. And  
567 then if there was like, no hope learning on your own then they would  
568 come in, then the instructor would come in, give a hand and lead you in  
569 the right direction then push you right out the door pretty much. [Laugh]  
570 And so, that class was good that teach me the reality of ... sort of  
571 college and the especially outside of college with the work world and  
572 that you're not going to have a teacher holding your hand and be like,  
573 'Yeah, that is the answer, here's how you use it here'. I had to kind of  
574 learn those connections myself."

575

576 I: "Okay, so now think of a subject or a class or something, where you  
577 found you didn't need to put in a lot of effort to succeed, you could  
578 almost just coast by. Describe what that looked like to me."

579 S: "Umm, in my high school I had religion classes, which... especially  
580 at like, freshman year it was a lot of information that I had already  
581 learned like, growing up with my family in that religion."

582

583 I: "Sure."

584

585 S: "So, it was really easy to kind of just think back, instead of like  
586 having a ... relearned it all, it was easy to kind of just, get by with the  
587 knowledge I had. Which made the class kind of boring I would say,  
588 especially because, I was... I didn't, sure there would be snippets to add  
589 onto the info I knew, but it wasn't... a new perspective or a new way of  
590 thinking that I hadn't already been taught."

591

592 I: "Mhmm."

593

594 S: "So that class was kind of a... easy 'A', sort of class, coasting  
595 through, just being able to act like I was listening almost, instead of fully  
596 being present."

597

598 I: "How do you feel about not needing to put a lot of effort in it?"

599

600 S: "As a high school student it was nice having that mental break time,  
601 but it was also like, I would also hate that class because it was that  
602 mental break time. Cause... sure it wouldn't be difficult to figure out the  
603 answer or anything like that, but it'll be disappointing almost, to have to,  
604 spend an hour of my time learning nothing new."

605

606 I: "So, what did you get out of that experience? Did you learn anything  
607 from it?"

608

609 S: "Part of it is it's better to... learn on top of the info you have, but you  
610 still have to be interested and challenged by it enough to where it's not  
611 mindless repetition."

612

613 I: "Okay, so... now think about... other students, you know, think about  
614 one that puts a lot of effort to succeed and you see them working hard all  
615 the time. What does that tell you about how smart that student is?"

616

617 S: "I knew someone in high school who was... so far in their classes  
618 they pretty much finished all the math classes we had available and were  
619 taking online and I would occasionally see that person's notes and be  
620 amazed that they understood it. And they also.... I also knew they had to  
621 take the time to teach it to themselves almost. That made me... that  
622 added to the idea that they were intelligent but ... at least, cause the  
623 amount of effort and how they were able to understand it added to the  
624 idea that they were smart but, it was also just the fact that they were so  
625 far ahead and still comprehending it so easily also played into the idea  
626 that they were smart, just to everyone around them."

627

628 I: "Okay, now think about someone else that you knew who... succeeds  
629 but doesn't have to put in a lot of effort to do so, they just coast by  
630 automatically. What does that tell you about how smart they are?"

631

632 S: "I don't know if it says they're smarter than the first person I  
633 described, but they work faster I would say. They... I've had friends like  
634 that who that, I'll be doing the same thing as them but they'd be done  
635 hours ahead of me so that would tell me that, 'Okay, they make the  
636 connections faster', but that doesn't mean they're smarter, they're just  
637 fast... they work quicker than I do..."

638

639 I: "Okay."

640

641 S: "... But the two people could very well be on the same level of  
642 intelligence."

643

644 I: "So now, tell me about a specific time when you received feedback  
645 that you weren't performing to expectation."

646

647 S: "It was during that [program name] thing that I described, we were...  
648 we had to summarize how we worked and how we felt we worked with  
649 each group, and then our instructor would offer his opinion in what he  
650 actually saw. I got to the end thinking I did really good, and he pretty  
651 much said you did Okay, but you could have done much better and that  
652 was kind of a... punch to the gut but also a good learning moment.  
653 Cause then that kind of forced me to look at the moment and like, 'Yeah,  
654 he was right, I could have done this, this or that to improve but I just  
655 thought I was doing good enough'. So that was kind of a moment to  
656 make me realize that, 'good enough' sometimes isn't... enough."

657 [Laugh]

658

659 I: "Okay, so how did you respond to receiving that feedback?"

660

661 S: "It was kind of like the bad grade almost where it's like, oh bummed  
662 for the next... how... not whole day. But then be kind of like, I got to  
663 pick myself up and figure out how to do better in the future."

664

665 I: "Okay, what was the outcome of your reaction?"

666

667 S: "A re-inspired work ethic I would say cause, I had already been kind  
668 of... I was already working at it but it became kind of... mundane,  
669 mindless almost after like, the third month of having to repeat this  
670 learning experience or exercise. And being told you can still do better  
671 was kind of just... fuel to the fire I need to keep working."

672

673 I: "Alright, so did you learn anything from that experience?"

674

675 S: "That you can always do better than you think, there's always  
676 something more to learn, or improvement to be made, even if you think  
677 you are far enough to survive."

678

679 I: "So let's say you... find out that someone, maybe someone you know,  
680 maybe someone you don't, but they are struggling with a similar  
681 situation to that. What advice would you give them?"

682

683 S: "So if the person got the bad response or something like that how  
684 would I respond...?"

685

686 I: "Yeah, they've told they're not performing to expectations and just  
687 kind of don't know what to do with themselves. What would you tell  
688 them?"

689

690 S: "I would offer my... if it was something I understood or doing decent  
691 in, I would offer my assistance 'cause... at high school that was what I  
692 was taught to do. But then I would also... kind of give an optimistic  
693 view on it like, 'Hey, there's always more time to improve or it's just,  
694 you still have this much time to get better' or something like that, try to  
695 help them see a bright side to it as well."

696

697 I: "Okay, so tell me if you care... do you care if peers or professors or  
698 whoever judge you when you do poorly?"

699

700 S: "Yes to an extent..."

701

702 I: "Can you elaborate?"

703

704 S: "... It's Okay if they say I didn't do good in this regard, but if they  
705 just leave it at that, then it bothers me. But they say, you didn't do good

706 in this, you can... you should have done this or you should improve by  
707 like, focusing on this subject or... if they give a way to improve instead  
708 of just being like, 'Oh, he didn't understand it, shame on him'. But  
709 they're like, willing to help you see, the right path to go at it, is  
710 beneficial if you get a negative response. Instead of just saying, 'You did  
711 bad' and walking away."

712

713 I: "Okay, so... do you... feel bad about them judging you if you did  
714 poorly even if they give you helpful feedback?"

715

716 S: "I can feel like, depending on how they give the feedback. If they say  
717 it almost mockingly, then it will stick with me for a while. But, I don't  
718 know, something... I did theatre in high school so kind of just want to  
719 say forget what they think so that... because it's like they won't... their  
720 opinion won't matter twenty years down the line. But even though if  
721 they... it comes down to how they say it and what they do but, if they  
722 do, they try to belittle you, I kind of just... I take what they say and then  
723 think about it and if it's actually helpful I'll learn from it but then I'll  
724 kind of just say 'Forget it, you don't matter in how I view myself', if  
725 they try to also downgrade how I view my own importance."

726

727 I: "Okay, now do you think you learn from an experience that's  
728 challenging or not challenging?"

729

730 S: "Learn more from an experience if it's challenging if you're... if it's  
731 a good challenging, like, you have to think about it from a new  
732 perspective or if you have to apply this new idea. But if it's challenging  
733 just 'cause, like, here's a stack of papers you've got to fill out, that isn't  
734 beneficial I would say. But if it forces you to apply a new logic over five  
735 exercises or an essay, that is good, but not if it's... so quality over  
736 quantity is pretty much what I'm trying to get at."



737

738 I: "Okay so... yes, if it's actually difficult, no, if it's just long and  
739 tedious and takes up all your time"

740

741 S: "Yeah"

742

743 I: "Okay, if you were given a challenging experience, would it matter if  
744 you succeed in doing it?"

745

746 S: "It would definitely feel better if I did good in it, but if I could see  
747 why I didn't do well in that challenging experience I would say that'll  
748 also be Okay I would say. I'd still feel like I wish I could've done better  
749 but... as long as I can see the ... where I need to improve then... be okay  
750 in the long run of life."

751

752 I: "Would your answer change if it was a project that affected your  
753 grade in a class or just... say a participatory grade? Would that change  
754 your feelings on succeed or fail?"

755

756 S: "Yes and if it was a grade like, this has like a... I don't know, say  
757 twenty percent impact, I'd want to do as best as I can. And I'd be even  
758 more bummed ... I'd be even more frustrated with myself almost if I got  
759 back to it and it was like, you did bad at it. But, if it was a participation  
760 grade with a challenge like that, then it eases the stress and kind of  
761 makes it easier to take in the moment. Instead of feel like, 'Okay, I got  
762 to understand this perfectly at the moment.'"

763

764 I: "Okay, so now that we've talked through all these ideas related to  
765 motivation, and effort and challenges, how would you summarize what  
766 you've shared with me?"

767

768 S: A lot of it focused on our own... my own perception of success and  
769 failure and how that relates to intelligence. And I kind of went with the  
770 idea that... it's very good to succeed at a challenge but it's also Okay if  
771 you fail and learn from it. it's always good to have a good grade or grade  
772 point but it's also Okay to struggle at the same time as long as you learn  
773 something from your struggles instead of just focus on that bad grade  
774 and be like, 'I don't understand, I'm never looking at this again'. So...  
775 and then also to the idea that the other people involved it's... people are  
776 intelligence... intelligent in different ways, and some may work faster  
777 while some may just be able to take in much more information but that  
778 doesn't mean one's better than the other in the end."

779

780 I: "Sure, would you say you've gained any insights from our  
781 conversation?"

782 S: "Yeah, it was very good kind of having to voice my own opinion on  
783 all of this, kind of force myself to think of it in words instead of that  
784 abstract idea in the back of my head. So that was very... I would say that  
785 was good."

786

787 I: "So what insights did you think you've gained?"

788

789 S: "I put into words my idea that it's Okay to fail almost, cause I kind of  
790 grew up with the idea that I've got to have that perfect GPA or whatever  
791 but, looking back on the interview was kind of good. Having to say out  
792 loud that it's Okay if I don't get that good grade or whatever. Cause in  
793 the end, there's somewhere to learn along the way."

794

795 I: "Great, do you have anything else you feel like sharing?"

796

797 S: [Laugh] "Not that I can think of, that was a lot of info to take in."

798

799 I: [Laugh] “Alright, thank you.”

1     **Interview Transcript 3: Cylo Ren**

2     Interviewer: Allison Adams

3     Date Interview conducted: 09/14/2018

4     Transcribed by: Dong Ren

5

6     Interviewer: “So, Cylo Ren with a ‘C’.”

7

8     Student: “Mmhmm.” (affirmative)

9

10    I: [Laugh] “Alright, our goal is for us to have a discussion about your  
11    beliefs or perceptions of the nature of your intelligence. The discussion  
12    will inform my understanding of the perceptions of engineering students  
13    and will help make decisions about the undergraduate engineering  
14    experience and how it can be improved for all students. I want to hear  
15    your own thoughts and perceptions, I am expecting that they’ll be  
16    different from the thoughts of others, there’s no right or wrong answer. I  
17    aim to understand your perspectives so I’ll ask questions like, ‘What do  
18    you mean by that?’ These types of questions can end up being a bit  
19    awkward and may require to deeply reflect on what you’ve experienced,  
20    so I’ll just leave you long time, pauses after my questions. Take your  
21    time, and if you need clarifications, please let me know.”

22

23    S: “Okay”

24

25    I: “Alright, that’s the first page... so, tell me about yourself as a student”

26

27    S: “Umm... what are you looking for?”

28

29 I: “Well, sometimes people will tell me... what they’re interested in as a  
30 student, sometimes they might give me adjectives about how they view  
31 themselves as a student. Whatever you feel like.”

32

33 S: “I... I feel like I’m a hard-working student, very driven, very  
34 motivated umm... I’m interested in what I’m studying, within like the  
35 engineering aspect, I think like more... more the more focus my  
36 engineering classes the more like, I’m going to enjoy them. And  
37 umm...”

38

39 I: “Okay, so... delving deeper, what does it mean to you for someone to  
40 be a ‘hard-working’ student?”

41

42 S: “Err... work like, basically give it all you got, like, as a student, aim  
43 to learn deeper not just like for a test or something, just kind of, aim for  
44 more intellectual growth through your like, classes and stuff. And  
45 like...umm... also like knowing your strengths and weaknesses, so you  
46 can develop on your strengths err... develop on your weaknesses more  
47 so that you could make your learning experience more efficient... I  
48 guess.”

49

50 I: “Okay, you mentioned understanding your own strengths and  
51 weaknesses. Can you elaborate what that means for you?”

52

53 S: “Ah so, I’m bilingual, umm, the first language I learned was  
54 [language] so my English reading is a little bit low.”

55

56 I: “What country is that spoken in”

57

58 S: “[Language? Country.]”

59

60 I: "Okay"

61

62 S: "So even on the ACT's and stuff when I took them, the reading test  
63 turned out to be lower than most others and like it was hard to develop  
64 on that. So like, over the summer and stuff, I would like, read more than  
65 other students and stuff. So that I can grow, that umm... that field of  
66 mine, but mathematics and other components like science, I'm pretty  
67 good at. So it's kind of like developing what you know, either through  
68 standardized tests or whatever, like, those tell you where you're at and  
69 what you can grow in things."

70

71 I: "Alright, and now tell me what it means to you to be a 'driven'  
72 student?"

73

74 S: "Err... trying to achieve... Err... let me start that again. Driven  
75 student, umm... one that has a goal, like, at the end of this class, what  
76 would I want to have gained from it? And umm, like knowing why  
77 you're here, to learn and to become better and to grow. Not like, just oh,  
78 like, to get a degree and getting that of it, you know? Or yeah. So just  
79 like, even looking more than the grades like, you're not just trying to  
80 make grades but you're also trying to umm... be more intellectual."

81

82 I: "Alright, what does it mean to you to be an 'intellectual'?"

83

84 S: "Okay ahhh....Wow... intellectual... it could be perceived in so  
85 many ways honestly, there's like verbal intellect, there's social intellect,  
86 there's like, numerical and stuff and err... I guess if you're... for  
87 example, I'm in an anthropology class right now and err... at the end of  
88 that anthropology class I would not have gained a numerical intellect but  
89 more of a... just kind of a base understanding of what language, like,  
90 linguistic anthropology, so what languages are and stuff, and have a

91 deeper intellect on, like, live deeper conversations about what makes  
92 them similar or what makes them different or makes distinct languages  
93 what they are. And at the end of my calculus class, I'm going to gain  
94 more numerical intellect in which I know to put in values like input and  
95 output, go through processes in steps, find like, anti-derivatives things,  
96 so I guess, it's different?"

97

98 I: "Alright, so you're saying it's multi-faceted?"

99

100 S: "Yeah, yeah yeah."

101

102 I: "Okay, now tell me what it means to you to be a 'motivated' student?"

103 S: "A motivated student, motivated... umm... just like I said for err...

104 driven students err... not just, also... not just be a student and I guess

105 Okay, motivated students I guess, it's umm, not just try to aim for

106 academic success but try to make the most out of college and all the

107 connections and all the like, different routes you can take, cause in

108 college there's so many clubs and things, and you can find yourself

109 really, you can like, join so many things you're interested in and that,

110 that as a student... you're a student learning from these clubs as well not

111 just from the class I guess, just trying to be more rounded, growing."

112

113 I: "Alright, now, tell me what it means to be an 'interested' student?"

114

115 S: "An interesting..."

116

117 I: "Interested"

118

119 S: "Ahhh, being interested in a subject? And getting through the class,

120 [whisper 7:07]"

121

122 I: "So, just wanting to know rather than just taking it cause you have  
123 to?"

124

125 S: "Yes, yeah, wanting to know the subject that you're studying, and  
126 taking that subject because you're interested in it."

127

128 I: "So, tell me about, why you consider yourself to be a hard-working, a  
129 driven, a motivated, an interested student?"

130

131 S: "Umm, why do I consider myself? I guess I could... first of all, I  
132 came to college, rather than doing anything else. Second of all, like,  
133 umm... I took what I had, like, I took what I had, like my... I told you  
134 my ACT score and any other like, test that I've taken and I like, try to  
135 improve from it and try to do better and develop and stuff. Cause I'm  
136 still young, my head is still pretty... permeable, it's becoming rock solid  
137 as I'm growing, I guess I want to improve and ... I forgot the question."

138

139 I: "Why do you consider yourself hard-working, driven, motivated?"

140

141 S: "Yeah, so that element of trying to become better."

142

143 I: "Alright, so let's say that you're taking a class and... for the sake of it,  
144 we'll just say it doesn't matter for which class. And you got an exam  
145 back, so let's say that you feel like you've succeeded on that exam, how  
146 would you react and why?"

147

148 S: "I'd be so happy, like, if it was a test that I studied day and night for it  
149 and I've been preparing over a week for, and I feel like what I have  
150 inputted has come out, like with a great output, as much as I've put in it.  
151 And... I'd be really happy... yeah."

152



153 I: "Alright, so on that exam, what do you consider 'succeeding' to be?"

154

155 S: "It would depend on... was the class rough for me over the semester  
156 or whenever like, right before the test was rough? Cause then if I've  
157 gotten like a 'B' or a 'C' on that test I wouldn't be as like, I wouldn't be  
158 as disappointed because if it has been rough for me to begin with then a  
159 'C' is a great score. If I've been... if I knew that I had the potential but  
160 have been slacking off and I get a 'C', that would be disappointing for  
161 me. But if I had scored well and it's been pretty difficult for me, then  
162 that's pretty awesome as well. Like I think, it'll just show how hard I  
163 worked overcoming obstacles and challenges."

164

165 I: "Alright, so do you consider a grade curve to be a factor which  
166 determines your measure of success?"

167

168 S: "Err... Grade curve? [Pause] I mean... a grade curve usually implies  
169 that the average, like the ... most of the class did like, slightly under... it  
170 was just hard for everybody. I guess it would imply that even if I did bad  
171 on a test, and got a grade curve, it's not necessarily... like, since it was  
172 hard to begin with it would mean... I lost my train of thought... so what  
173 was the question?"

174

175 I: "Does a grade curve affect your measure of success?"

176

177 S: "Uh... no, cause just like, the test was hard and the curve would be  
178 more necessary to be equitable."

179

180 I: "Alright, so let's say you had somebody that sat next to you in that  
181 class and you think they're really smart, way smarter than you are, and  
182 say you just happen to glimpse their grade and you did considerably  
183 better than they did on the exam, how would you feel and why?"

184

185 S: "Right, I think in a lot of subjects there's like, verbal understanding or  
186 like, conceptual understanding and then test, like, what you're ready for  
187 the test. In my calculus class there'd be kids who'd be on top answering  
188 questions, but those same kids, it'll be okay if they don't do as well on  
189 the test cause.... Those are two different intellects I believe."

190

191 I: "So it's just a matter of being a good test taker?"

192

193 S: "Yeah, I mean... partly..."

194

195 I: "Mhmm"

196

197 S: "... of course, those kids can study for the test just as hard but  
198 sometimes, tests, there are just people that just really good at test taking,  
199 and work hard at the class as well but they're not as verbally like, like,  
200 talking about the... verbally... they don't come out as verbally  
201 intellectual, if you know what I mean."

202

203 I: "Okay, so... looks can be deceiving sort of?"

204

205 S: "Yeah."

206

207 I: "Okay, would you share with anybody else that you did better than  
208 that person?"

209

210 S: "Err... maybe? Cause I'll kind of be proud?"

211

212 I: "Who might you share that with and why?"

213

214 S: "Maybe with a friend or my sister, I'll probably tell her, like if it's  
215 someone who sits next to me and is so smart, I'd probably already told  
216 her about that person, and there would probably be like, 'Oh, by the  
217 way, I got like a score, higher score than this person, so I guess I'm not  
218 as dumb as I thought" or whatever, I don't know, I thought it was just ...  
219 think it'll be kind of an interesting topic. Just... conversation starter."

220

221 I: "Okay, so, think of people you might not want to share that  
222 information with, why not?"

223

224 S: "Err... probably wouldn't want to share that with the person sitting  
225 next to me to begin with. Cause I wouldn't want them to think, 'Hey,  
226 I've been doing so good in the class and stuff. I've been participating  
227 well but I haven't done as well on the test.' I don't think they deserve to  
228 know that I've done better when I didn't seem to have it going at first,  
229 yeah."

230

231 I: "Okay, anybody else you might choose not to share that with?"

232

233 S: "Any of their friends."

234

235 I: "Okay, and for the same reason or any different ones?"

236

237 S: "For same reasons, I wouldn't want them to know that."

238

239 I: "Now let's say you got an exam back and you actually failed to  
240 succeed on it, how would you react and why?"

241

242 S: "Umm, my reaction would depend on how much effort I put into it,  
243 how much I studied beforehand, if I was slacking off the whole semester

244 or prior to the test then I wouldn't be as surprised, cause I would have  
245 expected that and vice versa, if I had worked hard be very disappointed.”

246

247 I: “Oakly, so what if... say the teacher took out a ... just... data of scores  
248 on the test that everyone did so you can see who did the average... well  
249 not who did the average, but what the average was, and what the high  
250 and low scores were, and you were pretty low on the scale, how would  
251 you react?”

252

253 S: “I'd be really disappointed, 'cause if it's a huge class like I said, there  
254 so very many types of students, all with like, different aims and goals.  
255 Some of them might not have worked as hard for the test, and now if I'm  
256 on the low scale and I've studied for this test, I'd be pretty disappointed.  
257 Like, it must have been something that I was missing that I need to get  
258 back to and understand really.”

259

260 I: “Okay, so... let's say on the other side of that class there's someone  
261 that you didn't consider as smart as you were. Let's say they did way  
262 better than you, how would you react and why?”

263

264 S: “I'd be sad cause, I mean, I wouldn't be sad, I guess just like I said, I  
265 might not of thought they were smart, I might not have thought they  
266 were driven but like you said, looks can be deceiving and they're... like  
267 actually really good students, they work hard and I guess I might've  
268 perceived them wrong or something, so I wouldn't be disappointed  
269 really, I'd be happy for them. But I wish... I probably would've wished  
270 to have worked just as hard and gotten, just as high a score.”

271

272 I: “So would you share with anyone else that you got a lower score than  
273 they did?”

274

275 S: "Oh how the tables have turned. Uhh... maybe... yeah I would share  
276 it with my friends I guess, that I... Yeah."

277

278 I: "So why would you share it with your friends?"

279

280 S: "Err... for moral support I guess, just kind of like, 'Hey, you're not  
281 dumb, see what you did on the last test...'"

282

283 I: "So would you have maybe someone you didn't want to share that  
284 information with?"

285

286 S: "Like everybody else, I wouldn't..."

287

288 I: "And why not?"

289

290 S: "... because it's a... it's a... blow on my part I guess, it doesn't... it  
291 doesn't make me the hero of the story."

292

293 I: "Pride?"

294

295 S: "Yeah."

296

297 I: "Alright, so does it matter to you if your peers or professors think  
298 you're smart?"

299

300 S: "Umm... yeah."

301

302 I: "Alright."

303

304 S: "I think, if they think that I'm smart, like, when you say 'smart' could  
305 it be like driven motivated as well?"

306  
307 I: "Sure, whatever you..."  
308  
309 S: "I mean..."  
310  
311 I: "... think of them perceiving you."  
312  
313 S: "... Yeah, I think it does matter 'cause they... those professor like,  
314 spent time on you because they know that you're really working hard,  
315 and they don't want to let you down as well. So yeah, whatever energy  
316 you would like to put out to the subjects that they're teaching, the same  
317 energy they're going to give teaching you and help you understand the  
318 subject as well."  
319  
320 I: "Right, how about your peers?"  
321  
322 S: "Umm, do I want them to think I'm smart?"  
323  
324 I: "Mhmm."  
325  
326 S: "Err... I mean, I'm just goofy with my friends [Laugh] like yeah, on a  
327 low scale, I don't want them to think I'm no like,... not lazy but trying  
328 to be a show-off all the time or anything. But if I was smart maybe to  
329 like, a low-extent, I mean I wouldn't really care if they were my  
330 friends."  
331  
332 I: "Okay, so... why do you feel like it matter if your peers think you're  
333 smart?"  
334  
335 S: "They don't look down on me? They don't judge me necessarily."  
336 I: "Okay."

337  
338 S: "If you, if you, prove to them that you're smart, then things you say  
339 become more valid."  
340  
341 I: "So tell me about what motivates you to get an engineering degree?"  
342 S: "Err... I've always like, wanted to be an engineer. I love like,  
343 teamwork and problem solving. What motivates me? I guess the aspect  
344 of making like, a better community or a better world, making an  
345 efficient world... I guess"  
346  
347 I: "So what do you like about problem solving?"  
348  
349 S: "Err... the fact that there is an end-goal. The fact that at the end it  
350 would benefit most, if it's like a real-world problem solving. I like that,  
351 a lot of ideas... diverse ideas come in mind and come into consideration  
352 while trying to solve the problem."  
353  
354 I: "Okay, so... how about teamwork? What do you like about  
355 teamwork?"  
356  
357 S: "Umm... teamwork. Okay, I like how there's, for example, I used to  
358 be in this robotics team in high school. I liked the fact there was sub-  
359 teams, I was in a design team so, but people with different skills and  
360 different, like things to offer were put differently, everybody has their  
361 strengths and weaknesses and I like those come together to bring some  
362 stronger err... product, or whatever it is you were trying to achieve...  
363 better robot I guess."  
364  
365 I: "Okay, how about... tell me about, what it means to you when you say  
366 'wanna improve the world through engineering'?"  
367

368 S: "Umm... having moved from [country], I've seen a lot of like, things.  
369 Like, I remember where I used to live, there used to be a huge dump  
370 over there like, there was a dumpster, but next to it was a dump, people  
371 just don't aim right or something at the dumpster. I used to think like  
372 you know, how I can solve that problem, maybe make a more usable  
373 dumpster, more attractive one that you want to put your trash in, those  
374 little things. Just kind of the little things just kind of helping others have  
375 a better life."

376  
377 I: "Why do you feel that's motivating to you?"

378  
379 S: "Umm, 'cause I feel like with a better resource, even in my country,  
380 with a better resource, people on the streets can get up and live a better  
381 life, you know? They would benefit out of that... social injustice I  
382 guess."

383  
384 I: "Okay, so..."

385  
386 S: "They would benefit out of social justice..."

387  
388 I: "Yeah, sure. Say you're making a pie chart of your motivations as a  
389 student. What percent would you say you're motivated by your grades,  
390 versus your desire to learn?"

391  
392 S: "Hmm, interesting [Pause] grades would be on 47 scale, no wait... 40  
393 scale and my desire to learn would be on 60 scale."

394  
395 I: "Okay, why do you think it falls on that proportion?"

396  
397 S: "Because, I mean I might come out with really good grades, but I  
398 might have not gained the benefits of like even, of like having an



399 opportunity of being in college or so much opportunities that are not as  
400 ... I guess, you have to individually value those opportunities but,  
401 grades are just grades, they're grades. But I really want to have good  
402 grades, great grades, but... they're not everything, there's so much that  
403 comes out of college."

404

405 I: "Okay, is your ratio sort of the same for all of your classes?"

406

407 S: "About the same, yeah... yeah, probably my math classes higher on  
408 the grade 'cause math I really want to understand it and get a good  
409 grade, my grade would be like, evidence, yeah."

410

411 I: "Okay, so in what ways are your grades important to you?"

412

413 S: "In a way that, I want to get an internship, and people will look at my  
414 grades that...my grades will look better if they're nicer, shows I'm more  
415 responsible, more rounded student if I'm also involved in other things,  
416 and yeah, I think that's, yeah, that's about it."

417

418 I: "Alright, so in what ways is learning important to you?"

419

420 S: "Umm, trying to... like learning, just kind of... Okay, sorry I just  
421 need time to think about this one."

422

423 I: "That's fine, take your time."

424

425 S: "Umm, taking all the opportunities you have, not just from the  
426 classes, but the clubs, different organizations that you can join, like the  
427 campus ministry that I'm a part of, we do a lot of bible study and things.  
428 There's not a grades on the... at stake but you know, I still want to hear

429 more about my spiritual being and stuff. So I guess I wanna grow more  
430 understanding of things I'm passionate about."

431

432 I: "Alright, do you think that, it's more important to you as a means to,  
433 keep moving forward, or... like jobs and such, or do you think it's more  
434 important to you such as, just self-improvement?"

435

436 S: "Wait, I don't understand the question sorry."

437

438 I: "Yeah, sorry... might not have been well-worded. So, learning is  
439 clearly important but, do you think it's more important because of how it  
440 can set you ahead in life, such as getting jobs, getting internships? Or do  
441 you think it's important in terms of self-improvement, I just want to  
442 learn everything I can?"

443

444 S: "Self-improvement honestly, cause getting jobs and more of that  
445 element comes from grades honestly, or at least I think, comes from  
446 grades that just as evidence, paper evidence that you've learned, but  
447 learning is more for self worth."

448

449 I: "Okay, so say you're signing up for classes and, you know how in  
450 [university] there's sometimes lecture A and lecture B and they might be  
451 taught by different professors?"

452

453 S: "Mhmm."

454

455 I: "If you heard a reputation about these two professors, and one of  
456 them, it's going to be really hard to pass that class, but you're pretty sure  
457 you'll learn a lot from it. And the other professor, you could pass that  
458 class easily, no problem, but you might gain as much knowledge from  
459 that class. Which one would you sign up for?"

460

461 S: "That's a really hard question, both and both. I mean I have had prior  
462 experience, there was an [history class] teacher that I was assigned with,  
463 that didn't really teach much, like she... Okay, she gave me trouble, but  
464 her class was just based on projects and stuff. There... this other teacher  
465 that really taught, like he did notes every day, he explained everything  
466 every day, I mean, I kind of wish I had him, I think I would have got the  
467 same grade either ways. My grade is on the line, I guess...umm... "

468

469 I: "Do you think it might change depending what class it is?"

470

471 S: "Yes, yes, if it was a class I'm not... Like an English class. If it was  
472 an English class, I just want to pass it. But if it's like a science class,  
473 then yes I would probably want to gain more knowledge from it, and  
474 more understanding, and potentially put my grade on, at risk but I'm still  
475 going to try my best."

476

477 I: "Alright, so why would you choose the harder one for science?"

478

479 S: "'Cause I'm going to want to become an engineer, I want to have a  
480 good foundation of what I'm talking about you know, to anybody I'm  
481 working with... yeah."

482

483 I: "And the English class? Why would you probably choose the easier  
484 professor?"

485

486 S: "'Cause it's not as big of an interest, it doesn't grow as an interest in  
487 me as science does I guess."

488

489 I: "Alright, now tell me at school your strategies for learning and  
490 studying material."

491  
492 S: "Umm... pre-read the lecture, going to the lecture, trying to review it  
493 right after if you have time, trying to review and try to digest that  
494 information, process that information again."  
495  
496 I: "Okay, how have you come to use and develop these strategies?"  
497  
498 S: "Err... I have, like my calculus teacher, he would explain things  
499 sometimes I wouldn't understand, but if I have done the pre-reading for  
500 that class, I would know exactly what he's talking about. Like, I'd heard  
501 the lecture from not the best ways at all to learn things, but they're the  
502 best for reiterate, or just like, reimburse the information you've already  
503 had in your head. Err..."  
504  
505 I: "Reinforce?"  
506  
507 S: "Reinforce, yeah... the information that you've already had in your  
508 head. So yeah, just doing that honestly, makes a whole like, difference."  
509 I: "Okay, how have these strategies that you use changed over time?"  
510 S: "Umm... it really depends when I don't have time for this, if I don't I  
511 just don't do this, a lot of stuff I guess, will become harder later than it is  
512 now. Umm...yeah."  
513  
514 I: "Okay, do you feel like you need to study more now that you're in  
515 college?"  
516  
517 S: "Oh yeah, yeah, college is all about all the effort you put in it, it's not  
518 about like, in high school you can be smart and go about it, you know  
519 like that. But here, it's all about the effort you put in... yeah."  
520  
521 I: "How do you feel about the fact that you need to put more effort in?"

522

523 S: "Umm, I think it's fair game, cause I had some smart friends that  
524 didn't try as hard as me and got better grades, and now they have to try,  
525 have to try and I'm good at trying, so... I think it's fair game... yeah."

526

527 I: "Okay, do you... have any just kind of, emotions towards it like,  
528 'Yeah, let's do it' or 'don't know why we have to do this' or ..."

529

530 S: "if I'm going to do it I better be positive about it and I'm going to be  
531 positive, I'm going to like, I'm really going to work hard and try to keep  
532 my mind and my like, my physical health, my mental health healthy as  
533 much as possible so that I don't like... I'm breathing through it you  
534 know? Like really trying to be as healthy as possible, to be as active as  
535 possible, my academics..."

536

537 I: "Okay, so do you try to take more of a view of, 'Yeah, I've got to put  
538 in all this time but I'm going to gain something out of it'?"

539

540 S: "Mhmm."

541

542 I: "Okay, as a general rule, how much effort do you feel you put into  
543 your classes?"

544

545 S: "Right now, I feel like... I'm only taking 13 credit hours, not only  
546 that but, since I'm only focused on those 13 credit hours, I feel like I'm  
547 putting in a lot of effort even though I still have like, plenty of time. It's  
548 all about working efficiently and really focusing on things, attention to  
549 things and reviewing right after things, instead of laying it all off, and  
550 you can get stressed later."

551

552 I: "So you're not taking a... buttload of classes but you are putting in a  
553 lot of effort to the ones you are taking?"

554

555 S: "Mhmm."

556

557 I: "Why do you feel you are putting a lot of effort in?"

558

559 S: "I have plenty more time, and I like the output, I like to see 'A's' on  
560 my gradebook, always gets me to smile and things, and knowing that,  
561 you know, I want to make it through college, I want to get through  
562 college with good grades at least the first one or two years... yeah."

563

564 I: "Okay, when you take a class that... you just have to put more effort  
565 in than say another class to get an 'A', do you feel like you learn more  
566 from that class than the one you got an 'A' fairly easily in?"

567

568 S: "Umm... Okay see that depends, are there tests taken in both classes?  
569 Cause you said it was the same classes just different like, rigorous like  
570 err..."

571

572 I: "We could be talking about the same class or we could be talking  
573 about different subjects, either way."

574

575 S: "Okay, oh yeah, I guess for like electives that I would want to take or  
576 whatever. Umm... I think I would learn more from a harder class, just  
577 cause it would push me and challenge me more, I'd have to put more  
578 effort in it."

579

580 I: "Okay, compared to your peers, do you feel like, if you put more  
581 effort in, do you learn more than your peers do?"

582 S: "Yeah when I put a lot of effort in, I think I do, yeah. I think I'm ... it  
583 really depends on who they are."

584

585 I: "Okay, alright, think about a class or subject or something that you  
586 had to put a lot of effort in to succeed at that thing, and just tell me about  
587 it."

588

589 S: "Ummm... there goes my thoughts, don't know what I was..."

590

591 I: "You're fine, you're fine."

592

593 S: "So a lot of efforts in...wait, can you ask the question again?"

594

595 I: "Yeah, that you are... you just, think about a class or subject or  
596 whatever that you just had to put a lot of effort in to succeed at that and  
597 just tell me about it."

598

599 S: "Umm, Okay, I guess like, my [history] class, it was the first test, the  
600 very first test, that I studied so hard for, and I'd read like, hundreds of  
601 pages. I did not get the score I expected, or wanted at all. I got a pretty  
602 like... anyway, I don't want to talk about it but, it was kind of sad but I  
603 just kind of realized that honestly for that class, like the exams you have  
604 to take for that class, you just have to be smart, I guess. Some of the  
605 things you put all your effort in, still don't get the output you want."

606

607 I: "Okay, so you say in order to get that, you just have to be 'smart',  
608 what do you mean by that?"

609

610 S: "Umm, book smart, it all kind of like, depends on umm... like, what I  
611 think of it as is like, the school system you went through. Like American  
612 history, especially for me it was kind of like, difficult, 'cause I didn't

613 maybe like, I didn't fully learn American history for a while and now  
614 I'm in the same push class. And umm, it's like, 'What am I doing with  
615 my life? Why am I here?', But the other kids might've really focused on,  
616 really learned the foundations of American history and helped them,  
617 even without studying to answer those foundation questions."

618

619 I: "Okay, so how do you feel about the fact that you had to put extreme  
620 amounts of effort into [history class]?"

621

622 S: "Umm, think it really like, sucks. But I have to put in that much effort  
623 to get the output that I want... yeah."

624

625 I: "Did you feel like you gained anything from that experience?"

626

627 S: "Yeah, I don't know my history, basically. Yeah some things are just  
628 kind of... the way they are, you know? You can't really change it as  
629 much as other things."

630

631 I: "Mhmm, I'm kind of laughing a little because I'm remembering my  
632 [history] class." [Laugh]

633

634 S: [Laugh]

635

636 I: [whisper] "I gave my teacher nightmares."

637

638 S: "You did? You had one of those teachers..."

639

640 I: "Oh, he had all kind of nightmares, he had nightmares about the  
641 subjects of my book reports."

642

643 S: "Oh... interesting." [Laugh]



644

645 I: "Uhh... I'll tell you about it later. So, now think about a subject or a  
646 class you succeeded easily, barely any effort at all, and just tell me about  
647 it. "

648

649 S: "Okay, I've taken a lot of chemistry classes over my high school  
650 years. But the first, I guess chemistry wasn't really... but the first exam  
651 that I took I aced it and I didn't really study much for it. And I thought  
652 because I had a great foundation, in chemistry at least, that was the  
653 beginning task, and I thought I... I felt bad for those who haven't had as  
654 much chemistry class. I think that's yeah."

655

656 I: "How did you feel about the fact that you had to barely put in any  
657 effort to succeed in there?"

658

659 S: "Feels awful, I wish I could do that for every test, feels like... felt  
660 more pointish that... I didn't have to put in every much, I really enjoyed  
661 that."

662

663 I: "Okay, do you feel like you got anything out of that experience?"

664

665 S: "some things you know you're good at it, focus on your like,  
666 weaknesses. I know, studying for my... chemistry class, I studied for my  
667 anthropology which I think was more important know that as well. "

668

669 I: "Okay, so you just learned sometimes you need to focus on your  
670 weaknesses..."

671

672 S: "Yeah."

673

674 I: "... and reinforcing them rather than continuing to hammer out your  
675 strengths."  
676  
677 S: "Yeah."  
678  
679 I: "Okay, now think about people you know, and think about a student  
680 who puts in a lot of effort to succeed, what does that tell you about how  
681 smart that person is?"  
682  
683 S: "Umm, did they succeed at the end?"  
684  
685 I: "Sorry what?"  
686  
687 S: "Does the output like, did they succeed at the end?"  
688  
689 I: "Oh yeah, yes they succeed and they just seem to be coasting through  
690 everything."  
691  
692 S: "Okay, but they put a lot of energy to it right?"  
693  
694 I: "No"  
695  
696 S: "Oh you did, you said..."  
697  
698 I: "Yeah that, no wait... I'm reading the wrong question. I'm sorry, they  
699 do put in a lot of effort sorry."  
700  
701 S: "And then what..."  
702  
703 I: "They do succeed, just they have to work their butts off to do it."  
704

705 S: "I think they're like, they're very smart people, they know how much  
706 to put in to get a good amount of outs, I mean it's kind of unfair that  
707 they have to work as hard, like, very hard. But some people really know  
708 like, their limits and really understand themselves more you know, so  
709 they really put in the work they need or they need to."

710

711 I: "Okay, err... and now, the other one, someone who just coasts by and  
712 succeeds at everything, what does that tell you about how smart they  
713 are?"

714

715 S: "Oh, they're just, they're just book smart, might have been hereditary,  
716 it might have been genetical I guess, they coast through something, their  
717 brain is programmed differently I guess, from childhood."

718

719 I: "Do you ever suspect that maybe they just have taken more of these  
720 sort of classes before? So maybe for them, it's not that they're not  
721 putting in effort so much as, they already knew and just reviewing  
722 now?"

723

724 S: "Yeah, I think it's a lot of work you've put in as a child, your mind is  
725 like a clay then, so, honestly if they have read, even been like, you  
726 know, or like musically inclined or like, I think like, your mind, what it  
727 takes information as a child, it really like it just, everything would be  
728 like, relearning everything, you know? They just have a great foundation  
729 on... things."

730

731 I: "Okay, so think about just a specific time that you received feedback  
732 that you weren't performing to expectations and just tell me about it."

733 S: "Oh reading tests when I was sophomore, I scored pretty like,  
734 average, it was a little below average, and I was disappointed, and I was,  
735 below average in my class, and umm... I guess I was like, 'Yeah, you

736 need to pick it up or whatever, maybe to tune it up, maybe to try to  
737 strengthen that I guess.”  
738  
739 I: “How did you respond to that negative feedback?”  
740  
741 S: “Started reading more books, I did, time testing myself I guess, more  
742 and things, just try to gain as much as possible.”  
743  
744 I: “So you just worked on improving it?”  
745  
746 S: “Yeah.”  
747  
748 I: “Did you have any emotions receiving any of that feedback?”  
749  
750 S: “Oh yeah, I really felt low about myself, honesty, I was really  
751 disappointed, and like, if I’m, as a student, if I’m proactive, I really take  
752 those feedbacks and take into consideration, take into like, develop it.  
753 But I err... if I don’t care, then you know, I would never like, progress,  
754 and wouldn’t gotten anywhere.”  
755  
756 I: “Okay, what was the outcome of the... your attempts to improve? Do  
757 you feel like you’ve succeeded in it?”  
758  
759 S: “I feel like I’ve succeeded, but I feel like I’m also a teenager now, so  
760 my mind is not as permeable as it used to be. It’s just slow, developing I  
761 guess now, different umm... I guess I could just learn stuff slower.”  
762  
763 I: “Did you learn anything from that experience?”  
764  
765 S: “Yeah.”  
766

767 I: "Tell me about it?"

768

769 S: "Just kind of, some things aren't fair, I didn't get to have a high  
770 reading score,' cause I wasn't in English to begin with or whatever you  
771 know?"

772

773 I: "Okay, English-raised sort of?"

774

775 S: "Yeah, English-Raised I guess, I guess that showed on my ACT as  
776 well and on... I guess yeah, I learned there could be a gap between  
777 different people."

778

779 I: "Do you have any advice you would give to someone you meet, you  
780 would meet that's struggling with the same problem?"

781

782 S: "Try to just like, yeah, like try to self-develop. You already have your  
783 strengths, you know your weaknesses, just focus on your weaknesses  
784 first I mean, people great at reading might be bad at math too, then  
785 everybody just needs to work on their weaknesses I guess."

786

787 I: "Okay, do you have any specific tips for specifically someone who's  
788 same situation, not from an English speaking family or place and then  
789 they just, are... told they are behind?"

790

791 S: "Ah yeah, specific tips?"

792

793 I: "Mhmm."

794

795 S: "Yeah umm, try to develop on that, yeah try to develop what you're  
796 missing, what you're missing out on. But they still have their strength as

797 well I guess, share that with other people that don't have same strengths,  
798 just kind of help each other out."  
799  
800 I: "Okay, so just collaborate, maybe find someone who is good at that  
801 and then, ask for help?"  
802  
803 S: "Mhmm."  
804  
805 I: "Okay, so... if your peers or professors judge you when you do  
806 poorly, do you care?"  
807  
808 S: "Yeah, I do. Either reflects that I'm not trying hard, or might reflect  
809 that they don't want to invest as much in me, if my... if I had not shown  
810 to them that their investment in me has paid off."  
811  
812 I: "Okay, so that would be a professor?"  
813  
814 S: "Yeah."  
815  
816 I: "How about a peer? Do you care if a peer judges you when you do  
817 poorly?"  
818  
819 S: "Yeah, I mean yeah, we live in a society where we pretty much  
820 constantly do that."  
821  
822 I: "Why do you care if they judge you?"  
823  
824 S: "'Cause I don't want them to look down on me, and I don't want  
825 them to think I'm dumb."  
826  
827

828 I: “Okay, so... do you think you learn more from experiences that are  
829 really easy or really, really difficult?”

830

831 S: “Definitely really difficult, I think there’s a quote that says, ‘If it  
832 doesn’t challenge you, it doesn’t change you’ and I think that really  
833 stands, like some kids like, even growing up would be challenge more  
834 because the normal like, school work or whatever is not challenging  
835 them and I think that like, makes sense, because, they’re not going to  
836 change unless they’re really looking at life outside the window, err...  
837 looking outside the box. Or thinking outside the box...”

838

839 I: “Yeah.”

840

841 S: “... trying to challenge their beliefs and thoughts.”

842

843 I: “Okay, so if you engage in a challenging experience, does it matter to  
844 you whether you succeed in it or not?”

845

846 S: “Patent the fact that I... yeah, I mean, I kind of want to succeed, like,  
847 but... it’s also like, where have I been? Where am I now? Like my own  
848 self-improvement as well, but if I’ve been, yeah, if I’m new to this  
849 challenge whatever it is, cause I’d be happy to the fact that... more the  
850 fact that I’m already like trying.”

851

852 I: “Do you think if you felt you might not succeed at a challenging  
853 experience, but you might learn from it, would you still engage?”

854 S: “Yes, I would indeed, that’s why I joined my engineering program at  
855 school, ‘cause I knew it would be challenging, I see a lot of smart  
856 people, but at least I really got like, gained a lot of like, experience in  
857 it...”

858

859 I: "Okay."  
860  
861 S: "... Help me take up my challenging classes that I would have never  
862 been."  
863  
864 I: "How about like, if you're in extracurricular club or something, and  
865 they're giving out projects but you know there's going to be no negative  
866 consequences if you don't succeed, it's just, a challenge that they're  
867 giving everyone for the heck of doing it, would it still matter to you  
868 whether you succeeded or not?"  
869  
870 S: "Yes and no, it really depends on how challenging it is like, if it's like  
871 making a robot, driving it around and..."  
872  
873 I: "It's supposed to be challenging."  
874  
875 S: "It's supposed to be challenging? Oh it's supposed to be really  
876 challenging. No, cause, when I did the project for the design for the  
877 robot, I learned something new, I learned how to use inventor and I  
878 think that's getting something out of it even though we didn't make it  
879 much far out from regionals, but I think it was so great, the experience  
880 was still worth it."  
881  
882 I: "That sounds fun."  
883  
884 S: "Yeah it was."  
885  
886 I: "So now that we've talked through all these ideas related to  
887 motivation and effort and challenges. How would you summarize what  
888 you've shared with me?"  
889



890 S: "Know your limits, I mean, not know your limits more but, know  
891 yourself, your strengths, weaknesses. See what you can work on, even if  
892 you have to try harder than the rest, that I mean, that's Okay. Intellect is  
893 sometimes, err... not intellect, intelligence is sometimes hereditary and  
894 genetical and it's kind of unfair, or like whatever like, how much work  
895 you put in as a child, but how much you've been challenged as a child  
896 and things really depends on your, what you're going to become. That  
897 you cannot have control over, but honestly, it's just self-development  
898 that's key."

899

900 I: "Okay, do you feel you've gained any insights from our discussion?"

901

902 S: "Yeah."

903

904 I: "Do you want to elaborate on that?"

905

906 S: "Yeah, I guess, like you made me to go through what makes a  
907 motivated student, what makes a good student, and I guess me saying it  
908 out loud kind of reiterated like really err... reinforces the idea in my  
909 head. And that I need to do the things that I said makes a motivated  
910 student and also, I guess when you're making me talk, I'm starting to  
911 think more and more but, about intellect, and how I just have to try  
912 harder but I think I'm... on a position that I think that I need to try  
913 harder than others in, if you know what I mean."

914

915 I: "Yeah, I think I do."

916

917 S: "Yeah. That's about it."

918

919 I: "Okay."

**Interview Transcript 4: Doctor Manhattan**

Interviewer: Allison Adams

Date Interview conducted: 09/17/2018

Transcribed by: Dong Ren

Interviewer: “Our goal today is for us to have a detailed discussion about your beliefs about or perceptions of the nature of your intelligence. The discussion will inform my understanding of the perceptions of engineering students and will help decisions about the undergraduate engineering experience and how it can be improved for all students. I want to hear your own thoughts and perceptions, I’m expecting that they’ll be different from the thoughts of others, there’s no right or wrong answers. I aim to understand your perspectives so I’ll ask questions like, ‘What do you mean by that?’ or ‘Please elaborate’. These types of questions can be a bit awkward and may require you to really reflect on what you’ve experienced, so I’ll purposely leave you long pauses to answer. Take your time and if you need clarification, please let me know... Alright so, tell me about yourself as a student.”

Student: “Umm, trying to get my work done on time accurately, as good as possible, trying to learn as best as I can, that doesn’t always work out but, that’s kind of how school works. Feel like I’m constantly doing homework, I hate it, but I understand, it’s college. I’m almost done in... just in trying to do enough to keep scholarship and not worry too much about that because, I don’t think I can... err.. what I’ve done I might’ve been able to increase performance a little bit, but in the realm of things I feel like, not really. Just kind of been... ‘I gave my all’ type of thing, so.”

31 I: "Alright, now let's think about yourself as a student and if you were to  
32 put adjectives to describe yourself, what would you... pick?"

33

34 S: "Hard-working umm... trying to think of adjectives now... can't  
35 really think of much off the top of my head. Hard-working, I think for  
36 sure, but... organized... thorough, I guess, I don't know."

37

38 I: "So, what does it mean to you to be a 'hard-working' student?"

39

40 S: "just, do everything in your power to try and understand and produce,  
41 kind of, to get the results that you want."

42

43 I: "Okay, and now 'organized', what does that mean to you?"

44

45 S: "Just, basically the basis that you're organized, trying to be  
46 meticulous how you do things, so that it makes sense and is easy to see  
47 and read and interpret, or just find the information is here."

48

49 I: "Okay, now 'thorough'?"

50

51 S: "Try to be as, put down as much information as relevant as possible,  
52 to be as complete as possible."

53

54 I: "Okay, Why would you consider yourself a 'hard-working' student?"

55

56 S: "Why do I? I get bothered by things if I don't understand it at times,  
57 I'll be like 'Oh, why is it that way or why is that way?' and I try to  
58 understand it as best I can using resources, whether that be professors or  
59 talking to a friend who might know it more than I do. And I just keep  
60 trying until I get it or if time crunch happens just try and just put  
61 something down and reflect and try to improve from that so..."

62

63 I: "Okay, how about, why do you think you're an 'organized' student?"

64

65 S: "Umm, well I'm able to study off my notes and at least so far my  
66 results have been positive, I'd say relatively successful, and I'd say, if I  
67 was less organized, probably would have shown a little bit, just for the  
68 way that I do things, I like to be organized and tidy, make it easier, for  
69 myself then."

70

71 I: "Okay, now why would you call yourself a 'thorough' student?"

72

73 S: "Kind of goes back to the hard-working, if there is something I don't  
74 understand about it, I'll go back and I'll try to understand each process  
75 so that I do understand it better. So that I really would get every aspect  
76 that I notice to try to understand everything about it."

77

78 I: "Okay, so let's say you're in a class and you get an exam back, and  
79 you feel that you've really succeeded on this exam once you see it, how  
80 would you react and why?"

81

82 S: "I mean I'll be excited, cause, it's just the sense of accomplishment  
83 like, 'Oh yeah, I thought I did really well, and look, it shows that I really  
84 understand what's happening.' And it's just kind of a good feeling to get  
85 something right and have that much of a positive impact, for outcome on  
86 it, which will in turn then... affect your future in a sense, that one class  
87 I've had with every other class helps you, might give a better  
88 opportunity down the road or something."

89

90 I: "So, would... when you say you're happy about it. Are you more  
91 happy with, feeling that you've succeeded on this exam itself or with  
92 whatever opportunities it might provide you in the future?"

93  
94 S: "I mean a little bit of both but more in the present-minded for that  
95 aspect."  
96  
97 I: "Okay, so what do you consider to be a success on an exam?"  
98  
99 S: "Just depends on the exam, I'd say being successful on the exam is  
100 doing better than the average, whether that be a 'B' or an 'A', just, better  
101 than how the average person has done in that class, I'd say is  
102 successful."  
103  
104 I: "Better than the mean."  
105  
106 S: "Mhmm."  
107  
108 I: "So, would a grade curve affect your perception of success in an  
109 exam?"  
110  
111 S: "No, cause I'm in the nuclear option and I've gotten on an exam 50%,  
112 but that was a 'C' cause everyone else did just as bad. So... yeah I try to  
113 measure it based on how everyone does, because I know... I mean the  
114 professors aren't going to fail everyone, it just doesn't make sense so I  
115 just try to stay with or above the pack, just I feel like everything will  
116 settle itself from there but."  
117  
118 I: "Okay, let's say whomever sits next to you in that class, you consider  
119 that person way smarter than you are, and when you get your test back  
120 and you just happen to glimpse, and you did considerably better than  
121 they did on that test, how would you react?"  
122

123 S: "I mean first question would be, if I've never had a class with them,  
124 I'd be like, 'Oh wonder why they did so poorly?', then I'd think, 'Oh it's  
125 probably cause they're not a good test taker', cause I've known plenty of  
126 people like that. My dad, me at times, so I would, I wonder and then I'd  
127 probably start speculating but not think too much of it."

128

129 I: "Alright, would you share with anyone else that you did better than  
130 that person on that exam?"

131

132 S: "If they asked."

133

134 I: "Okay, is there anyone in particular you would just refuse to share that  
135 with?"

136

137 S: "No."

138

139 I: "Okay, so why would you just, not mind sharing if someone asked?"

140

141 S: "I mean, they're curious and I'd tell them my results, while at times  
142 it's worse than they would do, and I just laugh at myself, there's nothing  
143 you can do at that point."

144

145 I: "Would you tell anyone that you specifically did better than this  
146 person next to you?"

147

148 S: "Would I tell someone I did better than the person next to me?"

149

150 I: "Mhmm"

151

152 S: "Umm, I mean, maybe, I don't know. I'm sure I've done it in the past  
153 I can't say I won't do it again or I would never do it, technically."

154

155 I: "Is there anyone in particular you wouldn't want to tell?"

156

157 S: "No."

158

159 I: "And why, I guess?"

160

161 S: "Oh, umm, wait, just to clarify, there is no one I don't mind telling, so  
162 I'm comfortable with sharing."

163

164 I: "Yeah."

165

166 S: "Okay, umm, I mean again, there's nothing to be ashamed of in my  
167 eyes and I did how I did, it's not like their outcome or their views will  
168 affect how I did."

169

170 I: "Okay, so let's say instead of feeling you succeeded on an exam, you  
171 feel like you've failed to succeed on an exam, how do you react and  
172 why?"

173

174 S: "Like I mentioned, I'd briefly laugh at myself like, 'Man, I really  
175 screwed up this', and then, if it's bad enough, I'll talk to the professor. If  
176 it's a class I care enough about, I'll definitely talk to the professor, or  
177 someone else to try and understand more. If it's like, on the lower side  
178 of the mean on an exam, I'll be like, 'Eh, I just didn't do a few things  
179 right.' And just kind of take my loss and move on, try and prepare better  
180 for next time."

181

182 I: "Okay, so how do you react if when the professor send out the grades  
183 distribution and you saw that the other students in the class did way  
184 better than you did?"

185  
186 S: "How would I feel?"  
187  
188 I: "Yeah."  
189  
190 S: "I feel like, 'Oh I would need to step my game up, need to do  
191 something different'."  
192  
193 I: "And... if say the person sitting on the other side of you, you just  
194 didn't think they were a very smart person at all, and they did way better  
195 than you, how would you react?"  
196  
197 S: "I mean, same as if the perceived smart person on one side did worse  
198 just the other way, maybe they're really good at taking tests, maybe  
199 they're great at memorizing certain things. Maybe they just performed  
200 better than us, maybe we just had an off day or something, wouldn't  
201 think too much of it."  
202  
203 I: "Okay, would you share with anyone else that you did way worse than  
204 that person?"  
205  
206 S: "I mean yeah, I'm very comfortable sharing my performances."  
207  
208 I: "Do you know why you're so comfortable with that?"  
209  
210 S: "Again, it is what it is, nothing you can do to change it, no point  
211 trying to hide it or feel ashamed, I mean, there's going to be that little bit  
212 of, 'Oh crap I did really bad I feel embarrassed', but the same time, it's  
213 done, can't change it."  
214



215 I: "Okay, does it matter to you if your peers or your professors think  
216 you're smart?"  
217  
218 S: "I mean, a little bit, I don't want someone to think I'm unintelligent or  
219 just, 'Why are you even here?' Everyone cares, I think about how other  
220 perceive them in that example."  
221  
222 I: "Okay, so why do you care, if they think you're smart?"  
223  
224 S: "Getting real deep with these questions."  
225  
226 I: "Well that's the point isn't it?"  
227  
228 S: [Laugh] "Yeah [Long pause], don't really have a good answer."  
229  
230 I: "Okay, do you have any bad answers?"  
231  
232 S: "I guess it makes you feel a little bit better about yourself, someone  
233 thinks that you're smart, they might try and come to you more often or  
234 trust you with certain things."  
235  
236 I: "Do you think that someone you perceive as 'smart' you would also  
237 perceive as 'trustworthy'?"  
238  
239 S: "Depends, I mean, I've met plenty of people who, I'm not that close  
240 with or I wouldn't trust as much just because of personal connections or  
241 that type of stuff."  
242  
243 I: "Okay, so now, tell me about what motivates you to keep pursuing an  
244 engineering degree?"  
245

246 S: "Umm, I've always been curious about how stud works, like the  
247 paper for example, 'How did they do that?' and I've always been  
248 intrigued by things, and see problems that are challenging but are very  
249 interesting at the same time. Umm, it's one reason why I chose nuclear,  
250 it's very complex but there's a lot of potential and... I'm just kind of  
251 excited by opportunities that are out there, even if I can't get some of  
252 them but still like the scientific drive behind it."

253

254 I: "Okay, so why do you feel like your desire to just know how things  
255 tick motivates you towards engineering?"

256

257 S: "Umm, I mean I understand that, at least with some of the things that  
258 I've been interested, with nuclear for example, requires a lot of rigorous  
259 scientific knowledge, all the math and background behind it to use and  
260 apply for future problem solving. And I also seem to have a better  
261 understanding for some of that versus, 'Oh I can just take this motor  
262 apart and be good to go', so... I seem to be better suited towards it,  
263 compared to other things but it just seems to make more sense to me. "

264

265 I: "Okay, so let's say you make a pie chart and the factors on that pie  
266 chart are your motivations as a student and your motivations to study  
267 and do student-things. What percent would you say you are motivated  
268 by grades versus your motivation by your desire to learn things?"

269

270 S: "If it were just those two?"

271

272 I: " Mhmm."

273

274 S: "I'd say it's more skewed towards desire to learn versus grades, but  
275 obviously grades have a huge importance in getting through school. So  
276 I'd say it's 55, 45, maybe if not closer to an even split so..."

277

278 I: "Okay, why do you think it's that particular split?"

279

280 S: "Umm, like I said, grades have a huge determination on being able to  
281 get jobs right out of the gate, I mean I got an email already that I was  
282 turned down for a position, I don't think I had the right GPA  
283 requirement, for example so... At least getting that first job, grades do  
284 matter somewhat, but I also try keep it at the skills that I've picked up to  
285 try and drive that as well, since that matters more in the end versus just  
286 some number."

287

288 I: "Okay, do you think your motivations stay the same for of all your  
289 classes? The split that is."

290

291 S: "No, some classes I'm just trying to get through because I don't have  
292 an intuitive understanding of how it works versus other classes, I find  
293 extremely interesting, the performance isn't there, or the rare case of I  
294 really like it and I do really well in it."

295

296 I: "Okay, have you noticed any particular trends of which type of classes  
297 go which way?"

298

299 S: "I hate all the structural stuff, and the math heavy classes, I don't  
300 think abstractly like that, umm I really like the thermodynamic type  
301 classes. I really like some of the nuclear classes, more of the hands-on  
302 compared to the theoretical so just more of the 'do' versus 'think' about  
303 it."

304

305 I: "Okay, so in what ways specifically is grades important to you?"

306

307 S: "Umm, keeping scholarships, and again just trying to keep that  
308 threshold that every job has, a minimum, just trying to stay around or  
309 above that. Cause grades are the most important thing at the end of the  
310 day, it only matters when you're in school, when you're out of school no  
311 one cares what you got."

312

313 I: "Sure, so in what ways is 'learning' important to you?"

314

315 S: "Learning is very important, I feel you won't ever stop learning,  
316 there's always going to be something new out there that you could  
317 potentially use for what you're doing. And... some of the things like I  
318 said, I'm not good at learning about, other things I'm very good at  
319 learning about. Just one of those important things that you always need."

320

321 I: "Okay, now say there's some course you're required to take for your  
322 major and when you're looking at enrolling, you know how sometimes  
323 they will have more than one lecture but by different teachers? Say  
324 either one works with your classes schedule but there's two teachers and  
325 by reputation you've heard of both of them. Say teacher A, you've heard  
326 their class is really, really tough to get through and you're going to have  
327 to put in a whole lot of work just to pass. But you feel like... but people  
328 feel like they've learned something really great in that class. On the  
329 other hand, teacher B, people feel like they don't learn as much, but they  
330 can just coast by. Which section would you enroll in?"

331

332 S: "I mean, I know I tend to get pretty specific, just the curse of  
333 engineers. Umm, it depends on the class, if it's a class I really like,  
334 honestly I'd probably choose the class where I actually learn something  
335 in it. if it's a class I don't care about or I'm just like, 'Just got to get  
336 through this, I don't like it blah, blah', I'd probably just take the easier  
337 coaster..."

338  
339 I: "Okay."  
340  
341 S: "... But if I see the relevance to something later on down the road, I'd  
342 probably lean more towards the, 'more challenging, but you learn'."  
343  
344 I: "Okay so, you feel like it would depend on what you most likely  
345 would get out of the class regardless of who taught it?"  
346  
347 S: "Yeah"  
348  
349 I: "Okay, so there is a situation where the answer you just gave me  
350 might change?"  
351  
352 S: "I mean when I was freshman and sophomore just getting through  
353 those pre-req's. I'd probably would've answered it, 'Oh yeah, I'd just  
354 take the easier class just to get done with it'. Cause I didn't see the end-  
355 game aspect of it, how everything now kind of mattered, based on back  
356 then, but there's a lot of other factors that played into that."  
357  
358 I: "Do you ever think you might choose based on who you feel your  
359 classmates might be? Like not..."  
360  
361 S: "Yeah that certainly has an influence I'd say."  
362  
363 I: "... Yeah, I feel like your friends are in the class that's one thing, but  
364 just... I remember when I enrolled in, especially pre-req's, sometimes,  
365 my decision of a class of based on what type of people I felt like the  
366 class might be full of, cause sometimes in like, the [lowest] level pre-  
367 req, not even in my field courses I had to take. I found that the other  
368 students in the class kind of negatively impacted my feelings towards

369 that class, whereas some of the more higher level ones, even if I didn't  
370 maybe like the course material as much, my classmates made it more  
371 enjoyable, do you ever feel like that happens to you?"

372

373 S: "I'd say it did early on, probably. 'Cause we're all in the same aspect  
374 of, 'we're not learning much, we get through as easily as we can'."

375

376 I: "Do you think it's less relevant now because you're in more  
377 specialized classes?"

378

379 S: "I think it's still relevant, but I'm definitely more open to the  
380 challenges and the actual learning cause it's something that I actually  
381 care more about but I also see the relevance of having, like the skills to  
382 translate later."

383

384 I: "Okay, so if you were choosing based on whether you felt like your  
385 classmates would just be looking for an easy class or whether you felt  
386 like they'd be looking to really gnaw their textbook, which class would  
387 you choose?"

388

389 S: "Probably the, gnaw textbook"

390

391 I: "That's a funny thing I came up with just now..." [Laugh]

392

393 S: [Laugh]

394

395 I: "So, just in classes in general, tell me about your strategies for  
396 learning and studying."

397

398 S: "Umm, my study habits have never been great, I understand every  
399 professor's like, 'read the textbook, read the textbook, read the

400 textbook'. I often find that, oh there's a lot of useful stuff you can get  
401 from there, at the end of the day I just, like last on my list in terms of  
402 priority, cause I've got so much other things, I've got work, I've got  
403 homework and then by that time it's probably dinner, like 8:30 or 9  
404 o'clock, and I'm like, 'Okay, whoa'. I want to relax for at least an hour  
405 today, I don't find reading a textbook relaxing, so more often than not I  
406 choose to relax a little kind of just to refocus and regroup cause I find  
407 that to be extremely important. Umm, that was the study habits part, I  
408 can't remember the other part."

409

410 I: "Learning."

411

412 S: "Umm, but on the flipside so umm, radiation detection and  
413 measurements is that class that we have to take, where probably one of  
414 the most difficult classes that I've ever had to take due to the workload,  
415 but is probably the class that I've learned the most in, just cause of how  
416 thorough we'd have to be, in gathering information in writing our  
417 reports. So when I find a class that I really like, I don't have a problem  
418 reading to understand, because if it interests me, then it doesn't feel like  
419 a burden of having to sit down and just read. Just to learn from the book  
420 of the class I'm like, 'Eh, it's kind of interesting but... I could care less'.  
421 And I feel they cover the material pretty accurately in the classes  
422 anyways, 'cause they basically pull from the textbook."

423

424 I: "Okay, how did you come to where you are with your studying  
425 strategies?"

426

427 S: "What do you mean like..."

428

429 I: "Like, has there been a lot of trial and error? Has your teacher or your  
430 parent or your... sibling or somebody been like, 'hey, this is a good way  
431 to study'?"

432

433 S: "Yeah I mean I've always had people tell me that this is a better way  
434 to study and, I mean just growing up I've always found that, if I'm going  
435 to look at a textbook, I will, otherwise I'm just not going to get any use  
436 out of it, it's just like, I know it's not the best mentality but..."

437

438 I: "Okay."

439

440 S: "... I've managed to be, decently successful so far just by relying on  
441 the notes that I take in class and my ability to remember certain things."

442

443 I: "Okay, so how do you feel that these strategies changed over time?"

444

445 S: "I've gotten a little better at, looking at the text if there's something  
446 that is confusing. But I'd say that they haven't changed a whole lot but,  
447 cause I feel like I either know it or I don't, I could spend hours looking  
448 at a textbook and not get any more information or understanding that  
449 I've had before. Umm, that's definitely outweighed the few times where  
450 I've been able to gain more understanding from the reading."

451

452 I: "Okay, do you feel like you had to study more in college than you did  
453 in say high school?"

454

455 S: "Mhmm."

456

457 I: "How did you feel when you realized that you needed to do that?"

458

459 S: "Umm, just that it was necessary in order to be successful."



460  
461 I: "Were there any classes that you really had to study in more than  
462 others?"  
463  
464 S: "Yeah."  
465  
466 I: "And how did you feel about taking those classes?"  
467  
468 S: "It sucked, 'cause those classes where I really had to sit down and  
469 study and lot, are the classes that I haven't been that great in. and it's  
470 frustrating when you don't understand something and you get the  
471 negative results from that so... "  
472  
473 I: "Mhmm, so in general, how much effort do you feel like you put into  
474 your classes?"  
475  
476 S: "I'd say I put in a decent amount, I always feel like I can do more in  
477 each class, there's always more that I can do, but then I think about it  
478 and I say, 'Whoa, I can put all my time and effort into classes, and be  
479 stressed all the time, or not do as much and be pretty decently successful  
480 and gain all the other stuff that I can do with all the other time."  
481  
482 I: "Okay, how... why do you think you put... however much effort you  
483 put into any particular class?"  
484  
485 S: "Umm, majority of the effort spent in the class is just do the  
486 assignments and anything additional is just because I'm interested, or, 'I  
487 need to do better' type of thing, yeah I guess that's about it."  
488  
489 I: "Okay, do you feel like you learn more from a class you put a lot of  
490 effort into?"

491

492 S: "I wouldn't say there's anything conclusive that, shows one way or  
493 the other, spend a lot of time and learning more versus not spending time  
494 and not learning more, I haven't really noticed a trend, for that it just  
495 kind of depends on the class and how I seem to take the information."

496

497 I: "Why do you think that is?"

498

499 S: "No clue. Umm, I don't know why I like the things that I do, class-  
500 wise, I just know if I understand it, I understand it. If I don't, I don't,  
501 there's no somewhere in between but, it's one way or the other for me."

502

503 I: "Okay, how do you feel in that regards in compared to your peers?"

504

505 S: "Feel like I'm not as successful as them. Feel like a lot of people get  
506 the better GPA's than I do. Then subsequently get more offers initially  
507 than me, I mean that kind of motivates me too, it's kind of like, I've got  
508 to prove that I'm just as capable, even though I... I don't like whole,  
509 'judge on GPA first' aspect, I never liked it but."

510

511 I: "You never liked it but you just have to accept that it happens?"

512

513 S: "Yeah"

514

515 I: "Okay, how does that make you feel seeing that your classmates get  
516 job offers way before you do?"

517

518 S: "Umm, I mean it's kind of demoralizing that everyone else gets a job  
519 and you're kind of like sitting over here waiting for something. Never a  
520 fun feeling, feeling that you're left out, like you're not good enough."

521

522 I: "Sure. Now think of a class or subject or something where you had to  
523 put in a LOT of effort to succeed in, and just tell me about it."

524

525 S: "So, radiation detection, we had labs every week and had a lab report  
526 due every week. Now to get one of these lab reports done they grade  
527 anywhere from 4 to 15 pages, so we're putting in 20 hours a week worth  
528 just on the lab report alone, that's not even including the homework or  
529 anything else that came up. Umm, I worked my butt off in that class and  
530 while I didn't get an 'A', I still felt extremely proud of myself just cause  
531 of how difficult it is to make it through that class and the level of  
532 success I've had on lab reports that I've heard compared to everyone  
533 else. I felt proud of that accomplishment, cause it was not easy in the  
534 slightest."

535

536 I: "Okay, how did you feel about having to put in so much effort having  
537 to succeed in that class?"

538

539 S: "Umm, it was kind of stressful and tiring, and it wasn't that I was  
540 stressed because of how much it was because of myself saying a level  
541 of, 'this is the kind of quality that I want going towards that goal instead  
542 of just doing the bare minimum. If it's something that I like, and I feel  
543 like crap if I don't do the best that I can. So it's stressful but because of  
544 the requirements I was putting myself at, to try and produce good quality  
545 stuff."

546

547 I: "Okay, what do you feel like you got out of that experience?"

548

549 S: "A lot, how to properly write reports, do research on understanding  
550 the topic to the point where you can adequately talk about it in a paper.  
551 It's hard to do, but it took... that took majority of the time was

552 researching how it all worked so you can adequately understand it then  
553 put it back down on paper. I think that's a really important skill and..."

554

555 I: "Okay."

556

557 S: "... It was really useful."

558

559 I: "Pretending for a moment that time-travel happened and you had the  
560 option to do it or not, again. Would you?"

561

562 S: "Yeah, I'd take that class again."

563

564 I: "Okay, now think about another subject or class or whatever that you  
565 didn't really need to put in a lot of effort to succeed, you could just sort  
566 of coast by and get an 'A' or whatever you consider to be success or  
567 whatever. Describe that to me."

568

569 S: [Pause] "Something like a history class, I've always been good at  
570 memorizing dates and facts, kind of always helped me with history,  
571 since that's all it is, just dates and facts."

572

573 I: "Mhmm."

574

575 S: "Umm, I wouldn't really have to read the text, I can just show up in  
576 lecture, not even pay attention half the time and be able to remember  
577 everything adequately enough for the homework or points or however  
578 that worked..."

579

580 I: "How did... Oh sorry, go ahead"

581

582 S: "... and I just wouldn't try as hard, the laziness there would  
583 sometimes cost me the difference between a 'B' and an 'A', but just, I  
584 felt comfortable be like, 'Okay, if I can just sit down and just listen I'll  
585 be fine'."

586

587 I: "Okay, how did you feel about not needing to put in much effort to  
588 that class?"

589

590 S: "Kind of a bit boring. Cause I'll just sit there, and be like, 'Okay, I'm  
591 just sitting here for an hour, I'm just listening to someone'. Wasn't that  
592 engaged and..."

593

594 I: "Do you feel like you've got much out of that experience or  
595 anything?"

596

597 S: "Eh, not a whole lot"

598

599 I: "Not a whole lot... if there was anything what was it?"

600

601 S: "Just learning cool things, about certain events in history."

602

603 I: "Okay, say you had the option to take a class in which will be equally  
604 as boring as in that history class or equally as challenged as in the  
605 nuclear class I think you said it was? If you had the choice between  
606 taking class of those calibers, which one would you pick?"

607

608 S: "Depends on the class obviously, umm if I was presented the choice  
609 between an 'easy A' or just really learning, grabbing a lot of useful stuff  
610 I'd choose the difficult one."

611

612 I: "Okay, do you think you'd ever choose based on, whatever other  
613 classes you have on your plate this semester?"

614

615 S: "Yeah... "

616

617 I: "Okay."

618

619 S: "... Cause when I took detection I took... cause I've heard from  
620 people whose taken it before, this class is really time consuming, take a  
621 light load. The professor even warned us, take a light load with this  
622 class. It's... all your time will be spent on this class. And I did, I don't  
623 think I could have handled much more than what I took, I only took 12  
624 credits and one other class was an engineering class, the others were  
625 just, to help my workload. Something I didn't have to worry about to  
626 focus most of my time on that."

627

628 I: "Okay, now think about people you know, and think about someone  
629 who puts in a lot of effort to succeed and they do end up succeeding, but  
630 they're basically working their butts off all the time. What does that tell  
631 you about how smart that person is?"

632

633 S: "I mean not a whole lot, it can vary, they can be very smart and that's  
634 just what they like to do, just sit down and work really hard all the time  
635 and they could be perceived as not as smart, but work real hard to get the  
636 results that they want so..."

637

638 I: "Okay and in comparison, tell me about someone who succeeds but  
639 barely puts in any effort to do so. What does that tell you about how  
640 smart they are?"

641

642 S: "Well, I'd say that they're good at school, in general. They've kind of  
643 figured out the best way for them to get the results they want. They  
644 probably have a better general understanding of the class and the  
645 coursework than someone else and it just makes it easier for them. Some  
646 people are just better at the academic aspect versus others so..."

647

648 I: "So are you telling me that smartness is really more of a multi-facade  
649 thing? Kind of like those... character stats where it's like, 'strength,  
650 intelligence, charisma' and you've got all these points on a circle scale  
651 but really everyone kind of ends up with about the same area, but it's  
652 different how..."

653

654 S: "One way or the other, yeah that's how I view it."

655

656 I: "Okay, do you think that people are about as smart as each other? Or  
657 do you think that there are extremes on either end?"

658

659 S: "There are always going to be extremes on either end, all goes back to  
660 brain chemistry, how that works, but umm, I'd say that everyone is  
661 smart just in one way or another that no one else or very few will be as  
662 smart as they are in that aspect."

663

664 I: "Okay, now tell me about a specific time, it could be a class a job a...  
665 person to person relationship and you just received feedback that you  
666 weren't performing to expectation, and just tell me about it."

667

668 S: "Umm, I just, I try to really understand what is the problem and try  
669 and do what I can do to fix that. And I always try and ask for feedback  
670 so I can always improve."

671

672 I: "Has that ever happened to you?"

673  
674 S: "Mhmm."  
675  
676 I: "You want to tell me about it?"  
677  
678 S: "Yeah a relationship..."  
679  
680 I: "Okay"  
681  
682 S: "... They came to me and told me that in one area wasn't... not 'I'm  
683 not doing enough', but it's one of my weaker areas just it's not as much  
684 as they were needed or needing, and I try to really understand what the  
685 problem is and how I can address it. And it just happens to be too late  
686 that I understood that, but..."  
687  
688 I: "Okay."  
689  
690 S: "... still trying to work on it."  
691  
692 I: "So, would you say you responded by trying to fill that deficiency sort  
693 of?"  
694  
695 S: "Yeah I'm trying to improve it at least."  
696  
697 I: "Okay, what was the outcome of... or has there been an outcome of  
698 your attempt to improve?"  
699  
700 S: "Not yet, still ongoing, slowly but it's ongoing."  
701  
702 I: "Okay, have you noticed even any like, intermediate I don't know,  
703 something between results?"



704

705 S: "Yeah I mean, I'd say there's been some progress."

706

707 I: "Okay, have you learned anything from that experience?"

708

709 S: "Yeah, I'd say I have."

710

711 I: "Okay, if you found someone that was struggling to succeed in a

712 similar situation to the one you told me about, what advice would you

713 give them?"

714

715 S: "Just try to be as open and honest as possible, hard to understand if

716 you're not getting the information you need and that sometimes is just

717 how it is, but other times...it's, you're just going to have to put your

718 nose down and really work hard on it, if it's something you're not good

719 at."

720

721 I: "Okay, do you feel that your response would be... well obviously it

722 won't be exactly the same, but you know, situationally comparable if

723 you got the same feedback in say, a job?"

724

725 S: "Yeah I'd do the same thing, try the best I can to improve. Seek

726 feedback, seek help, try and improve in that area."

727

728 I: "What do you foresee the results of such an action being?"

729

730 S: "I hope it'll be positive, I've received the feedback, I work on it and I

731 become a better worker."

732

733 I: "Okay, so now back to school, do you care if your peers or your

734 teachers judge you if you do poorly?"

735

736 S: "I mean not a whole lot, obviously somewhat, everyone does. But in  
737 the grand scheme of things, no. cause, just 'cause I'm not good in that  
738 one area, doesn't mean I'm not good at something else."

739

740 I: "So why do you not care for the most part if they judge you?"

741

742 S: "Everyone's got an opinion."

743

744 I: "Would you say it just doesn't matter in the long run?"

745

746 S: "Yeah."

747

748 I: "Okay, would you care more if your teachers judge you rather than  
749 your peers?"

750

751 S: "No."

752

753 I: "Alright... do you have any particular reason why that teachers and  
754 peers [Cough] how much...sorry, how much you care would be the  
755 same?"

756

757 S: "Umm, I mean potentially I could have that one teacher for that one  
758 class, might never see them again. Versus peers, I've been with some of  
759 these people for 3 years or so now, it's just always nice to have a  
760 friendly face in the class who you can say, 'Hey I don't understand this,  
761 it looks like you do, can you help me out?' it just helps that, those  
762 aspects, just helps with the overall process."

763

764 I: "Okay. Do you feel you learn more from an experience if it's  
765 challenging or not very challenging?"

766

767 S: "Challenging for sure."

768

769 I: "Okay, in that experience does it matter to you if you succeed in the  
770 challenge?"

771

772 S: "Umm not as much, cause at least I've put myself out there, some of  
773 the classes like, anything structural like materials or statics, I've just had  
774 the lack of motivation cause I didn't understand it and I just didn't feel  
775 like I had enough, challenge or support to really learn compared to, 'Oh  
776 we'll help you understand enough just to get by'."

777

778 I: "Let's say someone presented you with an opportunity to really  
779 challenge you and you might not succeed in it but you'll learn. Would  
780 you be considerably more willing to take on that challenge if there was  
781 no negative consequence of failure?"

782

783 S: "I mean yeah, I think anyone would, but I'm not shy if there is a  
784 chance to fail. Cause some of the best learning comes from failing."

785 I: "Sure, so now that we've talked through all these different ideas  
786 related to motivation, efforts and challenges, how would you summarize  
787 what you've shared?"

788

789 S: "I'm sorry, can you repeat it?"

790

791 I: "Yeah, now that we've talked through all these different ideas related  
792 to motivation, efforts and challenges, how would you summarize what  
793 you've shared with me?"

794

795 S: "Umm, that when the motivation is there, doesn't matter how  
796 challenging it is, I will just give it a shot, some things comes easier to

797 me which makes the class less challenging, and then therefore the effort  
798 kind of dips, versus others that I'm more challenged with sometimes  
799 learn more in the efforts there but I might not get the results."

800

801 I: "Okay, do you feel you've gained any insights from your discussion  
802 with me?"

803

804 S: "Yeah a little bit."

805

806 I: "Would you like to elaborate on that?"

807

808 S: "I'll try, it's been a lot to talk about, it's hard to remember everything.  
809 I guess more that if I'm just naturally good at something, I don't have to  
810 try and I get lazier and I find it less enjoyable."

811

812 I: "Okay anything else?"

813

814 S: "It's the only thing I could think of at the moment"

815

816 I: "Alright, thank you very much."

1     **Interview Transcript 5: Edoras**

2     Interviewer: Allison Adams

3     Date Interview conducted: 09/26/2018

4     Transcribed by: Rev.com

5

6     Interviewer: So our goal today is for us to have a detailed discussion  
7     about your beliefs about your perceptions of the nature of your own  
8     intelligence.

9

10    Student: Mm-hmm (affirmative).

11

12    I: The discussion will inform my understanding of the perceptions of  
13    engineering students and will help future decisions about the  
14    undergraduate engineering experience and how it can be improved for  
15    all students. I want to hear your own thoughts and perceptions. I'm  
16    expecting that they will be different from the thoughts of others. There is  
17    no right or wrong answer. I aim to understand your perspectives, so I'll  
18    ask questions like, what do you mean by that? These types of questions  
19    can be a bit awkward and may require you to reflect on what you've  
20    experienced, so I'll purposely give you long questions. Take your time.  
21    Let me know if you need any clarification. Any questions?

22

23    S: No. I don't think so.

24

25    I: All right. Next page. So let's start off with tell me about yourself as a  
26    student.

27

28    S: What would you like to know?

29

30    I: Anything you wanna tell me. Sometimes people talk about the sorta  
31    stuff they do as a student.

32  
33 S: Mm-hmm (affirmative).  
34  
35 I: Sometimes they just describe themselves with adjectives. Uh ... talk  
36 away.  
37  
38 S: Um, I'm a senior as- as you probably already know. And I  
39 procrastinate a lot (laughs) so I tend to pile up work until the very end,  
40 which probably happens a lot too. But I usually do pretty well if I  
41 actually like buckle down and actually, you know, get going on  
42 something. It's just the getting there process that takes a long time. But  
43 once I actually like am in the zone of learning or doing whatever I'm  
44 doing I can usually do pretty good. But it's rare to get into that zone.  
45  
46 I: Mm-hmm (affirmative). Anything else?  
47  
48 S: I don't think so. I think I'm okay there.  
49  
50 I: Okay.  
51  
52 S: As long as you are.  
53  
54 I: If you were to describe yourself ...  
55  
56 S: Mm-hmm (affirmative).  
57  
58 I: As a student with adjectives, what would you tell me?  
59  
60 S: Um, quick learner, I guess. That's not really an adjective. I don't  
61 know.  
62

63 I: It's sort of an adjective. It counts.  
64  
65 S: Um, occasionally lazy. (laughs) And ... I guess that's, yeah. (laughs)  
66  
67 I: Okay. So, what does it mean to you for someone to be a quick learner?  
68  
69 S: I can pick up on like the information pretty quickly, if I'm actually  
70 like focused on learning it or understanding it, I'll usually understand  
71 things quicker than other people around me, I guess.  
72  
73 I: Okay. And why would you say that you are a quick learner?  
74  
75 S: Because in comparison to other people, I would say that I'm just a  
76 little faster at, uh, picking up on ideas or concepts.  
77  
78 I: Okay. And how about the occasionally lazy?  
79  
80 S: (laughs) The occasionally lazy part.  
81  
82 I: Tell me like what that means to you.  
83  
84 S: Uh, so, I'm a quick learner if I'm actually doing it, and I feel I'm kind  
85 of repeating myself, but ...  
86  
87 I: No, it's okay.  
88  
89 S: A lot of the times, I just, uh, don't do it. (laughs) So I don't learn,  
90 because I don't actually get started, and I don't, like, focus on what I'm  
91 doing. So that's usually what I mean by lazy.  
92  
93 I: Okay.

94  
95 S: Mm-hmm (affirmative).  
96  
97 I: So, is there any particular reason why you might say you were more of  
98 a lazy student compared to other students? Or do you think that's just  
99 kind of a universal thing?  
100  
101 S: It's somewhat universal, but a lot of my friends and other people are  
102 ... they work a lot harder (laughs) I would say, than I do, most of the  
103 time. But I can usually keep up with them, so maybe that's part of it, that  
104 I just have never really been that overly challenged, even though I'm a  
105 pretty lazy, when it comes to the stuff ... like if it was something that I  
106 was really challenged on, I would probably kick it into a higher gear,  
107 just because I had to. But it's usually like doing the kinda bare minimum.  
108  
109 I: Okay. Now, let's say you're in a class, and you get your exams back,  
110 and when you see your score, you feel that you have succeeded on that  
111 exam.  
112  
113 S: Mm-hmm (affirmative).  
114  
115 I: How do you react, and why?  
116  
117 S: I'm pretty happy. I might tell others about it, unless they got a bad  
118 score, then I probably (laughs) wouldn't tell them. I would just, uh, I  
119 mean, we would probably talk about it anyway. But I'd be just happy,  
120 and, uh, maybe do something celebratory.  
121  
122 I: All right. So, what do you consider to be a success on an exam?  
123  
124 S: I guess it depends on the class. Like, if it's ... if it's an easier class,



125 then an A would be success. If it's one of the more difficult engineering  
126 classes, I would say like a B would be a success, and C would be, like,  
127 it's okay.

128

129 I: Okay. So, would a grave curd ... curd.

130

131 S: (laughs) Curve.

132

133 I: Yeah, that.

134

135 S: Yeah.

136

137 I: Would that affect your perception of what a success means on a test?

138

139 S: I think so, yeah. Because it's sort of your success in relation to others  
140 around you.

141

142 I: So, w- with a grave curve ... grave. I can't talk, I'm sorry.

143

144 S: (laughs) It's late in the day.

145

146 I: With a ...

147

148 S: (laughs)

149

150 I: With a grade curve ...

151

152 S: Uh-huh.

153

154 I: What- what is your n- new perception of success?

155

156 S: Um, above the average would be my general success.  
157  
158 I: Okay. So, let's say the person who sits on your right in class is  
159 someone, you might know them well, you might not, but regardless, you  
160 consider them really smart, way smarter than you are.  
161  
162 S: Mm-hmm (affirmative).  
163  
164 I: How would you react if you got a better grade than they did?  
165  
166 S: I'd be surprised. Um, yeah, I guess just surprised, and I would I guess  
167 why they thought they got a bad grade. Or if they didn't prepare enough,  
168 or if they just thought they knew the material, or whatever. Sometimes if  
169 you're ... if you think you're super-smart, you might assume that you  
170 know more than you do going in something, rather than if you think  
171 you're going from the bottom, you're gonna work harder to get up to  
172 there.  
173  
174 I: Okay. So, would you tell anybody else that you did better than that  
175 super-smarter person?  
176  
177 S: Probably. (laughs) Yeah. Uh ...  
178  
179 I: Who would you tell?  
180  
181 S: Um, probably friends. I usually have friends that are kinda  
182 consistently through the classes, so, I might tell them, or I might talk to  
183 him about it, or her.  
184  
185 I: So why would you tell them?  
186

187 S: I don't know. Maybe if they are usually doing better than me, I could  
188 ask what tripped them up, something like that.

189

190 I: Okay. And why would you tell your other friends?

191

192 S: I don't know, I'd just be excited about getting a good score on a test, I  
193 guess. (laughs)

194

195 I: Okay. Is there someone you just plain would not want to tell, even if  
196 they asked?

197

198 S: Not really, no.

199

200 I: All right.

201

202 S: I'm usually open.

203

204 I: So let's say on that exam, or maybe in the next exam ...

205

206 S: Mm-hmm (affirmative).

207

208 I: You feel that you have failed to succeed. How do you react, and why?

209

210 S: Um, I guess I would be kind of bummed out. I usually know that it's  
211 my fault for not working hard enough, so it's more just, uh, I don't know,  
212 less like sad and more like upset with myself for not doing as well as I  
213 should have, or preparing as much as I should have. And hopefully it  
214 would be preparing better for the next one just to make up for that.

215

216 I: Why do you think you would think that way?

217

218 S: Uh, what- what do you mean exactly? Like what way?  
219  
220 I: Well, like, why- why do you assume that you just haven't prepared  
221 enough? Is there any possibility you might have just been ...  
222  
223 S: Yeah. That's true.  
224  
225 I: Not taking the best test?  
226  
227 S: Yeah. Some, like, I took a class last semester that was really hard, and  
228 no one finished, like, the tests in the allotted time.  
229  
230 I: Oh. Were they like those ... that test on Star Trek where it's actually  
231 designed for you to fail?  
232  
233 S: (laughs) You'd think so.  
234  
235 I: (laughs)  
236  
237 S: Like, uh, no. (laughs) But it wasn't supposed to be, but it- it kinda  
238 was.  
239  
240 I: Okay.  
241  
242 S: So yeah. Um, so that one I didn't feel too terribly about, just because I  
243 knew that I didn't have enough time to actually do it, although I did kind  
244 of feel bad, because I also hadn't prepared. (laughs) But, like, yeah, there  
245 just wasn't enough time, and there was too much on the test for a 50-  
246 minute increment. And it was his first time teaching it, so he even said  
247 that, and he changed ... I think he curved the class because of that.  
248

249 I: So, regardless of whether it's a designed to fail test ...  
250  
251 S: Mm-hmm (affirmative).  
252  
253 I: But you got your grade back, and the professor posted one of those  
254 like box and whisker charts or something, um, on the board.  
255  
256 S: Mm-hmm (affirmative).  
257  
258 I: Just showing you how the distribution went.  
259  
260 S: Yeah.  
261  
262 I: If you did way worse than the majority of students in the class, how  
263 would you react?  
264  
265 S: Uh, probably just the same way, I would, uh, assume that I hadn't  
266 studied enough, and that I needed to prepare more, and probably talk to  
267 the professor, do more practice problems. So not good. (laughs) Yeah.  
268  
269 I: Okay. So, let's say the person on your left now ...  
270  
271 S: Mm-hmm (affirmative).  
272  
273 I: Maybe you know them, maybe you don't, but you don't think they're  
274 very smart.  
275  
276 S: Mm-hmm (affirmative).  
277  
278 I: In fact maybe kind of dumb.  
279

280 S: Yeah.  
281  
282 I: So what if they also did way better than you did?  
283  
284 S: That would just be way increased, the same feeling, I guess, that if  
285 they did that good, then I clearly didn't prepare well enough, and I  
286 probably went in thinking that I knew more than I did, or just didn't try.  
287  
288 I: So, would you share the fact that you did not as good as that person  
289 with anybody else?  
290  
291 S: Yeah.  
292  
293 I: Okay.  
294  
295 S: Yeah.  
296  
297 I: Who?  
298  
299 S: If I knew them somewhat, I'd probably share it with them, I've done  
300 that before. (laughs) Um, yeah, anyone, really, that asks. I'm not really  
301 ashamed of it or anything, it's just something that happens. So I wouldn't  
302 ... I don't think there's anyone I would specifically not tell, so.  
303  
304 I: Okay.  
305  
306 S: If they asked, I'd tell them.  
307  
308 I: Why do you think you don't mind sharing?  
309  
310 S: Um, I- I think it doesn't really reflect on me that much as a human. It

311 just reflects that I didn't study enough.  
312  
313 I: All right. So, if you remember I also asked more or less the same  
314 question with succeeding on the exam.  
315  
316 S: Mm-hmm (affirmative).  
317  
318 I: In those situations, would it change if instead of you thinking that they  
319 were smart or not, they thought they were smart or not?  
320  
321 S: Mmm, you mean like if they did poorly or what?  
322  
323 I: Either way. Like, if the first person that you thought was smarter ...  
324  
325 S: Mm-hmm (affirmative).  
326  
327 I: Would it change if they just had a really big ego and you did better  
328 than they did?  
329  
330 S: It'd probably make me feel a little better, yeah. Just out of spite, I  
331 guess. (laughs)  
332  
333 I: And then the person that you didn't think was smart, what if it was  
334 instead, they didn't think they were very smart?  
335  
336 S: Mm-hmm (affirmative).  
337  
338 I: And they did better than you.  
339  
340 S: I don't think that would change my opinion too much. Yeah. It would  
341 probably bother me more with the person who thinks they're smarter.

342  
343 I: Okay. Would it change whether or not you shared that information  
344 with them?  
345  
346 S: No, I don't think so. I mean, I may be more likely to share that they  
347 did better than me.  
348  
349 I: Okay.  
350  
351 S: If they thought they were less intelligent.  
352  
353 I: Okay. Does it matter to you if your peers think you're smart?  
354  
355 S: No, not really.  
356  
357 I: Okay. How about your professors? Does it matter if they think you're  
358 smart?  
359  
360 S: I guess it's nice, but it's not like, I wouldn't worry too much about it.  
361  
362 I: Okay. So, you're obviously pursuing an engineering degree.  
363  
364 S: Mm-hmm (affirmative).  
365  
366 I: What mo- motivates you to keep doing that?  
367  
368 S: Well, I like challenging things. I like math. And I'm also looking  
369 forward to a good salary. That's a big one.  
370  
371 I: So, mostly you like it, and you like being paid.  
372



373 S: Yeah. (laughs)  
374  
375 I: (laughs)  
376  
377 S: Exactly.  
378  
379 I: Uh, I'm strongly motivated to not starve to death, you know? (laughs)  
380  
381 S: Exactly. (laughs)  
382  
383 I: So, why do you think liking math and such motivates you to keep  
384 pursuing engineering?  
385  
386 S: I think it motivates me enough to not quit. (laughs) Basically. 'Cause  
387 it- it can be very difficult, so if you don't have strong math skills, then  
388 you're probably not gonna do very well.  
389  
390 I: All right. Are there any other particular skills within engineering that  
391 you feel you're pretty good at?  
392  
393 S: I think like problem-solving and communication I'm pretty good at,  
394 so things like that.  
395  
396 I: Okay. And how about, why do you think a good salary is motivating  
397 to you?  
398  
399 S: I like money. (laughs) I like being able to buy things and buy my  
400 family things, and have a comfortable life. Not have to have it be like a  
401 stressor, financially-speaking.  
402  
403 I: Oh, like, so they ... where found up to a certain amount, money does

404 actually buy happiness?  
405  
406 S: Yeah. (laughs) Exactly. Exactly.  
407  
408 I: Like, you don't need more than that, but ...  
409  
410 S: Yeah.  
411  
412 I: But up to that, please. (laughs)  
413  
414 S: But before there. Yeah. It's good to have.  
415  
416 I: So, if you were to make a pie chart about your motivations as a  
417 student ...  
418  
419 S: Mm-hmm (affirmative).  
420  
421 I: And the two colors you got were learning and grades, uh, how- how  
422 would you divide your motivations to study and be a student?  
423  
424 S: Probably like 75% grades, 25% learning, would be pretty close.  
425  
426 I: All right. Why- why do you have that distribution?  
427  
428 S: Uh, 'cause I don't necessarily want to learn everything that I have to,  
429 but I have to be graded on it in order to pass the class.  
430  
431 I: Okay. So is that distribution the same for all of your classes?  
432  
433 S: Probably not. I'm in a history class right now, which is interesting to  
434 me, so that one would probably be more like flipped to 75% learning

435 and 25% grade.

436

437 I: All right. Do you think the grade you get in that class also isn't as  
438 future, uh, influencing as your other grades? Or ...

439

440 S: Yeah, probably.

441

442 I: Okay. What about history do you find interesting?

443

444 S: All aspects of it, I guess. It's, uh, I think 17th century medieval  
445 Europe. Or not- not medieval, I guess, just Europe. So it's just very  
446 interesting time period.

447

448 I: Mm-hmm (affirmative). A little more Renaissance, maybe?

449

450 S: Yeah, probably closer to Renaissance. So it's just a very interesting  
451 time for me. I've always liked history, my mom kinda got me into it. So  
452 it's just an interesting subject to me.

453

454 I: Okay. So in what ways are your grades important to you?

455

456 S: Mmm ... well, it shows, hopefully, that I've learned the material, and  
457 that I can pass, (laughs) which is very important to actually get the  
458 degree. So I guess those would be the main two.

459

460 I: Okay. And why is important to you to have a sort of almost quantified  
461 way to show that you've learned?

462

463 S: I don't know. That's a good question, because it doesn't necessarily  
464 mean that you have learned. I know a lot of people that get through  
465 without learning things, and sometimes I've done that, so, I guess it's not

466   overly important to me. It's more important to getting through the  
467   classes, I guess.  
468  
469   I: Okay. Do you ever think about your grades in terms of your final GPA  
470   when you put out a resume? Or is it just ...  
471  
472   S: Usually I don't think of that, but I just think in terms of my getting  
473   through, I guess.  
474  
475   I: Okay.  
476  
477   S: Yeah.  
478  
479   I: And then, in what ways is learning the material important to you?  
480  
481   S: Uh, well, hopefully, I would be important for any career that I would  
482   have in the future, and especially for other classes that I have in the  
483   future, because they tend to build on each other. So like right now, I'm in  
484   two classes that depend heavily on differential equations, and that was  
485   like two years ago, (laughs) so I have to go back and learn more about  
486   that. But I ... Yeah. I already have like some of the base, though, from  
487   taking it, but now I have to go back and re- relearn it.  
488  
489   I: Sure. So, after talking about what your grades and your learning mean  
490   to you, do you think your pie chart would change at all?  
491  
492   S: Mmm ... I don't think so.  
493  
494   I: Okay.  
495  
496   S: Yeah.

497  
498 I: Now, say you're enrolling for next semester.  
499  
500 S: Mm-hmm (affirmative).  
501  
502 I: And you've got, there's one class that you have to take, but there are  
503 two sections taught by different professors. And you might not know  
504 these professors, but you at least know their reputations.  
505  
506 S: Mm-hmm (affirmative).  
507  
508 I: So, Professor A, it's gonna be really hard to get through his class with  
509 a good grade ...  
510  
511 S: Mm-hmm (affirmative).  
512  
513 I: ... at all. But you know that you're gonna come out having learned that  
514 stuff.  
515  
516 S: Mmm.  
517  
518 I: Now, Professor B, you're probably not gonna learn as much, but you  
519 know that you'll end up with an A in that course.  
520  
521 S: Mmm.  
522  
523 I: Which class would you enroll in?  
524  
525 S: I guess it depends on what necessarily it is. If like it's gonna be super  
526 useful for my career, then I would probably go with the harder one. But  
527 since it's my last semester of my senior year, I would probably, if it's not

528 gonna be that consequential, I would probably go with the easier A. But  
529 if it was like freshman, sophomore, and it was gonna like be, like, a  
530 building block for other classes, I would probably lean towards the  
531 harder.

532

533 I: So, in the end, it just depends on how important you feel that class  
534 will be in the end?

535

536 S: Yeah. Yeah.

537

538 I: Okay. Is there a situation in which your answer might change?

539

540 S: I guess if I like had a really heavy load of other classes, and I just  
541 wanted to get an easy A, that would be probably one. Or if I had a light  
542 load, then I would probably like to be challenged by one. So I guess it- it  
543 would all just depend on the situation.

544

545 I: Okay. If- if it was say a history class ...

546

547 S: Mm-hmm (affirmative).

548

549 I: Since you said you were interested in that.

550

551 S: Yeah.

552

553 I: And ... would that change your light load versus heavy load answer?

554

555 S: Hmm. Yeah, probably. I would probably go with an easier one on  
556 that.

557

558 I: Okay.

559

560 S: I think. Yeah.

561

562 I: Why would you go with the easier one in history?

563

564 S: Because it's not super important to my end goal. It's more of just an  
565 interest thing, so I feel like my interest alone would enable- enable me to  
566 learn more, rather than being heavily tested on like essay questions and  
567 all the other stuff in history. So I think I would learn around the same  
568 amount.

569

570 I: Okay.

571

572 S: But it would be less difficult.

573

574 I: Now, tell me about your strategies as far as learning and studying  
575 goes.

576

577 S: Mm-hmm (affirmative). You mean just in general, how I study?

578

579 I: Yeah.

580

581 S: Uh, rarely. (laughs) Um, I guess usually with the textbook, or doing  
582 homework problems. If it's easier stuff ... well, I mean, not easier, but  
583 like less specific stuff, then I'll go to YouTube and try and find videos  
584 on it a lot of the time, and I'll watch those and take notes on those, and  
585 it's mostly just doing practice problems and reading the book.

586

587 I: Okay. How have you come to use these strategies?

588

589 S: You mean like, how did I learn them, or how did I come across them?

590

591 I: Sure.

592

593 S: Um, I don't know, I guess I've just kind of always used them. I'm ... I  
594 grew up on the internet, so I've just always had that available, YouTube  
595 and Khan Academy and things like that growing up, so it just kinda was  
596 a natural progression to look there for help here.

597

598 I: Okay. Do you think that these strategies have changed over time?

599

600 S: Somewhat, yeah, probably. I- I don't think ... I don't think I used to  
601 read the books as much, and used to depend more on lectures and  
602 videos. But now I kinda have to read the books more, because they're  
603 more dense, and there's less of the lectures actually contain a good  
604 portion of the ... what's in the book, so I have to go into the book and  
605 read super into it.

606

607 I: Okay. Would you say that you've had to study more since you came to  
608 college?

609

610 S: Yeah. Definitely.

611

612 I: How did it feel when you realized that you would need to study a lot  
613 more?

614

615 S: Mmm ... not too terrible. I mean, it didn't increase that much, I guess.

616 I- I went to community before this, so it was definitely a step up, but  
617 like, it didn't really bother me too much, I guess.

618

619 I: Did you also have to study more in community college versus high  
620 school?



621  
622 S: Um, at times. A lot of them, I didn't have to study much more. But  
623 probably, yeah, more than at home.  
624  
625 I: Did ... have ... did you react to that at all, or was it just more, okay,  
626 yeah, I expected this?  
627  
628 S: Yeah, it was pretty much just expected.  
629  
630 I: Okay. Generally speaking, how much effort do you feel that you put  
631 into your classes?  
632  
633 S: Mmm, probably like mid to low effort.  
634  
635 I: Okay. So, why do you feel that your effort falls in the mid to low  
636 range?  
637  
638 S: Just because that's basically what I can get away with (laughs) and  
639 still get a pretty good grade.  
640  
641 I: Okay. Do you feel like you would learn more from a class that you put  
642 more effort into, versus one that you didn't?  
643  
644 S: Yeah, probably.  
645  
646 I: Okay. Why do you feel that way?  
647  
648 S: Well, I think if I put more effort into it, I would just learn the material  
649 more, and have more experience with it, and be able to more quickly  
650 solve the problems.  
651

652 I: Okay. And if that's the case, why do you put mid to low effort into  
653 your classes?  
654  
655 S: Because usually I can just ... I can get by okay (laughs) with, uh,  
656 pretty low effort. So it's just another laziness thing that I kinda have ...  
657  
658 I: All right.  
659  
660 S: Bad habits of.  
661  
662 I: So, compared to your peers ...  
663  
664 S: Mm-hmm (affirmative).  
665  
666 I: Do you think you put more or less effort into your classes, usually?  
667  
668 S: Mmm, I guess it depends on the peer. But, um ...  
669  
670 I: Maybe an average, then?  
671  
672 S: Yeah, probably, maybe lower than average, but it's up there. I would  
673 say like people that are doing as well as me, I would be doing less than  
674 them. But people that are doing significantly better than me ... is that ... I  
675 don't know if I said that right. (laughs) People, I guess, people who are  
676 doing ... yeah, I don't know if I ... what I'm saying here. But, uh, I guess  
677 like I would do ... I'm probably doing less effort than other people at my  
678 level would be my guess.  
679  
680 I: Okay.  
681  
682 S: Just from what I've seen.

683  
684 I: Now, think of a subject or class or something that you've taken ...  
685  
686 S: Mm-hmm (affirmative).  
687  
688 I: Where in order to succeed, you had to put a lot of effort into that class.  
689  
690 S: Mm-hmm (affirmative).  
691  
692 I: So, tell me about it.  
693  
694 S: Um, I guess detection last- last semester, it's a new course- course,  
695 'cause I'm in the Nuke option, so that was super hard. And there's a lot of  
696 report-writing for that, and the tests were very hard, and the homework  
697 was hard. So I had to actually put in a significant amount of effort for  
698 that.  
699  
700 I: How much of it would you say was, there's a lot to do hard, versus this  
701 is hard to do hard?  
702  
703 S: Um, it's probably about 50-50. I mean, the lab reports, there was just  
704 a lot to write.  
705 I: (sneezes)  
706 S: Bless you.  
707  
708 I: Sorry.  
709  
710 S: (laughs) The lab reports, there was just a lot to write. But the other  
711 stuff, it was more just the level of how hard it was.  
712  
713 I: Okay. How did you feel about needing to put so much effort into your

714 class?

715

716 S: Um, it was annoying. But, uh, it didn't bother me terribly, it just took  
717 a lot of my free time.

718

719 I: Okay. What do you feel that you got out of that experience?

720

721 S: I think I learned how to write reports better, and how to present my  
722 information better, because there was also presentations sometimes. And  
723 maybe to study a little better.

724

725 I: Okay. Now tell me about something, a class or whatever, that you  
726 took, that you did not need to put much effort in at all to succeed, and  
727 tell me about that.

728

729 S: Okay. Let's see. Okay, so, I guess ma- matrix theory. I took that with  
730 a teacher that was pretty lenient, and his tests were almost exactly like  
731 what his practice tests were, so I was able to prepare really well for that  
732 without a whole lot of effort. Like I didn't ... I don't think I opened his  
733 textbook like more than I had to to look at the homework questions. So  
734 that was pretty easy.

735

736 I: How did you feel about taking a class that required so little effort?

737

738 S: I enjoyed it, because other classes that I was in took more effort, so it  
739 gave me more time to do those.

740

741 I: Do you know anybody who, if they take a class that requires so little  
742 effort, feels like they've been cheated out of the tuition money?

743

744 S: I'm not sure if I know anyone specifically, but I can understand the

745 feeling.

746

747 I: Do you ever feel that way yourself?

748

749 S: Yeah. I think I could have been fine not taking that course at all. I  
750 think there's like quite a few courses that I can just do without, and like,  
751 turn this into like a two or three year program, (laughs) and just cut out  
752 the ... some stuff that doesn't matter. So that is annoying.

753

754 I: Okay. What did you get out of the experience of taking that really  
755 easy class?

756

757 S: It felt good to do really well on tests. (laughs) So, I mean, and that's a  
758 good feeling. And, yeah, I guess that's ... it was a nice feeling to do well.

759

760 I: So mostly endorphins? (laughs)

761

762 S: Yeah, right. Mostly endorphins.

763

764 I: All right. So, think about other students you know.

765

766 S: Mm-hmm (affirmative).

767

768 I: They don't have to be in engineering, just ...

769

770 S: Mm-hmm (affirmative).

771

772 I: People you know. And think of somebody who puts in a lot of effort  
773 to succeed. Like they do succeed, but in order to do that, they work their  
774 butts off. What does that tell you about how smart that person is?

775

776 S: Mmm ... I don't know. Smart's kind of a ... an interesting term,  
777 because I don't know if I really categorize people as smart or stupid.  
778 You know, it would just be more like, they do work harder, so they learn  
779 more. So, yeah. Does that answer it in any way?

780

781 I: More or less. How about a student that you know who succeeds with  
782 very little effort at all?

783

784 S: Mm-hmm (affirmative).

785

786 I: Does that tell you anything about how smart they are?

787

788 S: I guess maybe they have like a- a base level that's high ... as high as  
789 others without having to like build it up. And so I guess their  
790 intelligence is already at a point where they can kinda just go by,  
791 whereas someone else might have to build up to that point, you know,  
792 other people might be above that point, so they don't have to do  
793 anything. But, yeah, I guess that would be my answer.

794

795 I: Okay. What- what does it mean to you if someone asks, is this person  
796 smart?

797

798 S: I guess in a general sense, it would just be like, how much do they  
799 know, or ... I don't know, it's kind of a broad ... a broad, uh, term, I  
800 guess. Because it could mean how much you know, or how good you are  
801 at testing, or how good you are at math, or business, or whatever you're  
802 doing. So, yeah, I don't know. That's kind of a tough one. I guess the  
803 general term would just be like, someone who's very intelligent, they  
804 know a lot of things, and they know a lot, how- how to do a lot of things,  
805 they have good memory skills, I guess.

806

807 I: Okay. This may turn into a circular argument, but ...  
808  
809 S: (laughs)  
810  
811 I: You said that someone smart is someone intelligent. What is someone  
812 who's intelligent?  
813  
814 S: (laughs) Let's see. I guess it would be pretty much the same thing,  
815 but, uh, just, yeah, someone who has a lot of- of, uh, knowledge about  
816 how to do things, and maybe good problem-solving. I don't know if that  
817 would be considered intelligent. But yeah, pretty much the same thing.  
818 (laughs)  
819  
820 I: Okay. Now, think about just your life in general.  
821  
822 S: Mm-hmm (affirmative).  
823  
824 I: And tell me about a specific time when you received feedback that  
825 you weren't performing to expectation. It could be your schooling, it  
826 could be a job, whatever.  
827  
828 S: Mm-hmm (affirmative). What kinda feedback do you mean?  
829  
830 I: Just something that is expected of you.  
831  
832 S: Mm-hmm (affirmative).  
833  
834 I: You just aren't doing enough of it, or aren't doing it correctly or  
835 something.  
836  
837 S: Yeah. Okay. So, I guess last semester doing detection, I got quite a bit

838 of bad, doing the labs, because especially the first few ones, when I was  
839 kind of learning what they wanted and how to do it better, I got very low  
840 grades. So that would be one area.

841

842 I: How did you respond to receiving feedback that you weren't living up  
843 to expectation?

844

845 S: Um, very few endorphins. Um, I guess it just kind of made me want  
846 to do better. And made me want to take more time to write the reports in  
847 the future.

848

849 I: So, what was the outcome of your reaction to that feedback?

850

851 S: I took more time to write the reports. I- I think I went and talked to  
852 the lab people that were in, like, in charge of the- the reports, and what  
853 we did to get the reports. So, I went and sought out help, I guess.

854

855 I: Okay. What- what was the outcome of seeking help?

856

857 S: I did get better. And, yeah, sometimes it would go a little lower, but  
858 gen- the general trend was better.

859

860 I: Okay. Do you feel that you ... do- do you feel that you learned  
861 anything from that experience?

862

863 S: Yeah. Yeah, I think so. I think I learned how to write, like, longer,  
864 better, maybe more concise, I guess, and actually saying something  
865 rather than just saying words. So I guess that would be ... yeah.

866

867 I: Okay. What would you do if you were going into a situation that you  
868 just had this gut feeling it was gonna be pretty similar to that one?



869  
870 S: So, like, going into a class or something?  
871  
872 I: A class, a job, whatever.  
873  
874 S: Um, hopefully to prepare more beforehand, if it is that similar, like  
875 this report-writing and things like that, I guess. And I would already ... I  
876 feel like I have more skill in that department just from taking that class,  
877 so. Yeah, I guess I would just try to prepare better.  
878  
879 I: Okay. Let's say you meet somebody else who's about to go into ... or  
880 has maybe recently gone into that class, and they are having the exact  
881 same problem you were. What advice would you give them?  
882  
883 S: Just the same advice I took, I guess. To spend more time on them, and  
884 talk to the professor or their lab instructors.  
885  
886 I: Okay. So, if you do poorly on something, do you care if your peers  
887 judge you for not doing well?  
888  
889 S: No, not really.  
890  
891 I: Why not?  
892  
893 S: It just doesn't really have a huge effect on me. So, yeah, it just doesn't  
894 bother me that much.  
895  
896 I: Okay. How about your professors? Do you care if they judge you?  
897  
898 S: Not really. I mean, like I said, I like to do well, but if I don't, then I'm  
899 not gonna be hurt or anything.

900

901 I: Okay. So, why do you not really care if your professors judge you?

902 Why do you think it won't really affect you?

903

904 S: Well, it hasn't in the past, really. And they've taught like a bunch of  
905 students, so I don't really see how ... it just doesn't really affect me that  
906 much, I guess. I don't know.

907

908 I: When you say that, do you think your level of caring, I suppose, might  
909 change, depending on how large the class size is? Like, if it was a big  
910 lecture hall versus this teeny-tiny five-person classroom?

911

912 S: Mmm ... maybe a little bit, but not- not too much, because the- the  
913 detection class I took had like I think 12 people or something, and I  
914 didn't do great on the tests there. (laughs) But it didn't affect me too  
915 much.

916

917 I: Okay. So, between a challenging experience and one that's not  
918 actually all that challenging at all ...

919

920 S: Mm-hmm (affirmative).

921

922 I: Do you feel like you ... which one do you feel like you learned from  
923 more?

924

925 S: Definitely the challenging one. Yeah.

926

927 I: Does it matter to you if you succeed during that experience?

928

929 S: It's nice to succeed, but I think you learn more from failure. Because  
930 if you succeed, then you probably already knew it, or you knew almost

931 close to that. So I think the failure would probably teach you more.

932

933 I: (cough) Excuse me. So, w- would your feelings towards whether or  
934 not you succeeded during that experience change based on whether  
935 success or failure was graded, or whether, um, participation was graded?

936

937 S: Hmm. I think probably success, because I'll know that I failed. It's  
938 good to get feedback to know if you're doing wrong or right, I guess. So,  
939 I think the feedback is necessary in order to- to progress.

940

941 I: Okay. Which one would you care more whether you succeeded? Uh, if  
942 you were graded based on success or if you were graded based on  
943 participation?

944

945 S: Success, I guess. Yeah.

946

947 I: Okay. Would you still want to, uh, participate, whichever way it went?

948

949 S: Yeah.

950

951 I: Okay.

952

953 S: I think so.

954

955 I: Now that we've talked through all these different ideas related to  
956 motivation, effort, and challenges, how would you summarize what  
957 you've shared with me?

958

959 S: Um ... I guess just how I learn, or how I progress, how I kinda teach  
960 myself, I guess. Basic study habits, things like that. Yeah.

961

962 I: Okay. And so- so that's what we talked about.  
963  
964 S: Mm-hmm (affirmative).  
965  
966 I: What would you ... how would you summarize your answers for me?  
967  
968 S: Oh, my answers?  
969  
970 I: Yeah.  
971  
972 S: Uh, probably kinda how I was at the start. Uh, quick to learn but lazy.  
973 (laughs) Yeah. Or brilliant but lazy, it's from Spider-Man 2.  
974  
975 I: (laughs) All right.  
976  
977 S: (laughs)  
978  
979 I: Do you feel that you've gained any insights from our discussion?  
980  
981 S: Um, maybe a little bit, kinda just talking about bring ... might bring to  
982 light things that I didn't really know necessarily about myself.  
983  
984 I: Does anything come to mind?  
985  
986 S: Um ... I guess maybe how I view success versus, um, participation, or  
987 an easy class versus a hard class, something like that.  
988  
989 I: What do you feel that you've gained on those subjects?  
990  
991 S: That I would ... that I guess which class, whether I want a hard class  
992 or an easy class depends on the overall outcome and how that will affect

993     like my, yeah, how it will affect my outcome overall, I guess.

994

995     I: Okay. Is there anything else you want to share?

996

997     S: I don't think so, unless there's anything else you wanna know.

998

999     I: All right. Thank you very much.

1     **Interview Transcript 6: Fritz**

2     Interviewer: Allison Adams

3     Date Interview conducted: 9/27/2018

4     Transcribed by: Rev.com

5     Interviewer: Our goal today is for us to have a detailed discussion about  
6     your beliefs about, or perceptions of, the nature of your intelligence. The  
7     discussion will inform my understanding of the perceptions of  
8     engineering students, and will help future decisions about the  
9     undergraduate engineering experience, and how it can be improved for  
10    all students. I wanna hear your own thoughts and perceptions. I'm  
11    expecting that they will be different from the thoughts of others. There is  
12    no right or wrong answer. I want to understand your perspective, so I  
13    will put ... ask questions like, "What do you mean by that?" The  
14    essential questions can end up being a bit awkward, and might require  
15    you to really reflect on what you've experienced, so I'll purposefully  
16    leave long pauses for you to answer.

17

18    Student: Sure.

19

20    I: Take your time, if you need clarification let me know. Any questions?

21

22    S: No.

23

24    I: All right, so. Tell me about yourself as a student.

25

26    S: Um, you have any like, specific things that you're curious about, or  
27    just kind of an open, uh ...

28

29    I: Kind of an open question.

30

31 S: Okay. Um, I think that I'm someone who has to practice stuff to really  
32 learn. Um, I think I'm good at understanding concepts, concepts, but  
33 having to apply it, I need to practice that a lot. And that's something that  
34 I took a couple years of college to really, uh, get good at. 'Cause in high  
35 school everything is so hand fed to you, that you understand that concept  
36 and then they go over how to do it, kind of feed it into your brain and  
37 then it's, um ... Getting in college, I actually had a lot of trouble starting  
38 out with, um, applying myself to stuff, and when I had to do it on my  
39 own, having to work on, uh, assignments. Um, I think it was differential  
40 equations, the first time I took that was kind of the breaking point where  
41 I realized that, "Okay, just looking through my notes is not gonna get me  
42 through classes. I need to truly get at learning this stuff, um, to really  
43 understand it." Uh, so I think I was kinda one of those typical kids, who  
44 like, does well in high school 'cause its sort of easy and then you get to  
45 college and it kind of needs a little bit, and then ... and then you get,  
46 hopefully get better at it. And I think I definitely have, um, uh ... I guess  
47 that's kind of all I've got for that, for now I'd say that I'm, uh, probably a  
48 good student now but wasn't always. As, in college, um.

49

50 I: What does it mean to you to be a good student?

51

52 S: Um ... to make a sincere attempt to learn stuff, um, and to really try to  
53 internalize information, I guess. Um, and then learn how to apply it, and  
54 that's, I guess kind of the part that really matters, like, when your end  
55 goal is just being able to apply it at the end.

56

57 I: All right. Why would you say that you've become a good student?

58

59 S: Uh, because I have, had already spent a lot of money on school and it  
60 wasn't ... it, it's kind of just the path that I feel like I was set on to go  
61 school, and graduate, so I was like, "Well, I gotta do it, I gotta figure this

62 out and figure out how I'm gonna finish." I don't think it's ever really not  
63 been an option for me to not finish school. And not ... and, and just go  
64 and be something else. I don't really ... I, I don't think I can honestly  
65 imagine myself doing anything but graduating school and getting a job  
66 from it. I think that was something that has been definitely instilled in  
67 me very young, was, go to school, go to high school, go to college,  
68 graduate, maybe go to grad school, I dunno, probably not. But then go  
69 get a job, and that's it.

70

71 I: When you say you were set on this path, what do you mean by that?

72

73 S: Um, just because of ... well, my parents definitely. Um, they're both  
74 college educated, my dad has his master's in um ... and then just kind of  
75 my, also my school in general. I went to the uh, I was in the [school  
76 district], which is generally pretty good, um, so I had a very strong  
77 support system for my parents, uh, too. And influence from them and  
78 influence from my school. Um, and I was taking college level courses  
79 towards the end of high school and stuff, getting credit there, so, uh,  
80 yeah. I think that's probably ... yeah.

81

82 I: Okay. So do you feel like you, or someone or something else, had  
83 more to do with setting you on this path?

84

85 S: I mean ultimately it's my decision to stay on the path, but I think I  
86 was definitely put on it by other people. That I was definitely, kind of  
87 said like, go there. And somebody told me to do this, and ... and I  
88 continued. I did choose to do it, but, um ... yeah. I don't really think I, I  
89 don't know, is there any clarification on that, that you want, I guess?  
90 (Laughs).

91



92 I: I, I, I think that makes sense. You feel that outside forces put you on a  
93 path, but you have chosen to continue going it.

94

95 S: Right, yeah.

96

97 I: Okay.

98

99 S: Like a, like that's a, that's a more eloquent way of saying that, yeah.

100

101 I: (Laughs) all right, so, when you say that there's ... that you feel that  
102 there's no other option but this path ...

103

104 S: Mm-hmm (affirmative).

105

106 I: Uh, why do you feel that way?

107

108 S: Uh, part of it is, one of my [family], uh, for various reason, reasons,  
109 wasn't a great student. And she tried college and didn't end up making it  
110 past a couple, one or two years or something, and since then her  
111 personal life and financial, it's been difficult. And I kind of don't want  
112 that for myself, personally. So, and, and it's a little bit, I don't know,  
113 maybe selfish. Or, I don't know if it's selfish or self-preserving that I  
114 know that my future will be better if I finish school and get through it  
115 all. But um, so that's just kind of like a personal, uh, anecdote about that.  
116 And I guess there's tons of, uh, scholarly evidence that supports that as  
117 well. So.

118

119 I: Are you afraid of your parents or your teachers judging you if you  
120 ended up on that path?

121

122 S: Maybe a little bit, yeah. Um ... I think they would be disappointed in a  
123 sense, like I don't, I don't ... I, I'd definitely feel ashamed if I didn't, like,  
124 if I dropped out now. Especially that I'm 80-something percent of the  
125 way through? Um ... I think there is a lot of pressure to succeed. I don't,  
126 I ... I think they would support me, if I didn't make it either way, and if I  
127 did start to do something else, I could probably be successful at it. But I  
128 haven't even looked at those options or anything since I haven't really  
129 been to... and haven't considered it.

130

131 I: So you feel that they would support you but be disappointed?

132

133 S: Yeah. Because, I mean, hm. Yeah. I mean for one thing they put a lot  
134 of money into my education, and uh, and me being at school, and so  
135 that's kind of a, big investment in their kid not going through very well,  
136 um. I don't think like, disappointed as in like, oh I couldn't show my face  
137 around them anymore? But definitely just like, well that's, that sucks  
138 kind of thing. So. Um, yeah.

139

140 I: What do you think is a bigger motivator for you to stay on your  
141 current path? Fear of disappointing your parents, not that they'd be angry  
142 with you, just that they'd be, you know, sad or whatever? Or your own  
143 desire to stay on the path?

144

145 S: I think it's, I mean it's a little bit of a mix I guess? And it, especially  
146 initially, it was ... Initially it was probably more just disappointing them,  
147 like my first couple years or something. Now it's definitely like I, it's for  
148 myself. 'Cause I know, uh, what the possibilities of the future are if I  
149 make it, versus if I don't. They're ... I guess, if I do make it, my  
150 possibilities are more known and kind of, uh, definitely, uh, more  
151 optimistic about those than if I don't make it. So, I think at this point it's

152 also for me. Primarily about my own, uh, success. Not disappointing  
153 them.

154

155 I: Would you say that your biggest motivator for college might be  
156 wanting to ensure a better future for yourself?

157

158 S: Absolutely. Yeah.

159

160 I: Okay.

161

162 S: And I, and I, like, I tried something that I enjoy doing, like I enjoy  
163 mechanical engineering, and I, uh, but I, as I've gone through school,  
164 suddenly it got more of a, setting a better future for myself. Initially I  
165 was gonna go be an aerospace engineer, well I was gonna get  
166 mechanical, and do aerospace, and make airplanes 'cause they're cool.  
167 But then as I got through it, I was like, okay, I think this is more, needs  
168 more realistic I'm still interested, which is still thermo but, uh, definitely  
169 became more about my own future and setting myself a better trajectory  
170 in life than, than what I initially had intended, I think.

171

172 I: Okay. So let's say you're taking a class, and you get your exam back,  
173 and you look at your score and feel that you have succeeded on this  
174 exam.

175

176 S: Mm-hmm (affirmative).

177

178 I: How do you react and why?

179

180 S: (Laughs) I have a couple tests where I got a 100 still up on the fridge.  
181 (Laughs), on my own fridge.

182

183 I: (Laughs).

184

185 S: Um, and my projects. 'Cause it's definitely a really good feeling when  
186 you, uh, put in a bunch of work and it really, actually comes back to  
187 you. Um, and you actually get a grade that you were hoping for and  
188 maybe didn't expect and, um ... yeah. It feels really good when you get  
189 back a good grade, and ...

190

191 I: Okay.

192

193 S: I even moved houses and I kept 'em (laughs). 'Cause part of my  
194 motivation, kind of say like, "Yes, I can do this," and uh, that I am  
195 capable. So, it's a good reminder to have. So it is.

196

197 I: So, on an exam, what do you consider to be a success?

198

199 S: Um, get a good grade on it, I guess.

200

201 I: All right.

202

203 S: Whether that means like, getting the correct answer, or if they're  
204 judging more based off of your method, than the final answer. Whatever  
205 the grading rubric is, as long as you get a high grade on that.

206

207 I: So ... so, where is your cutoff for that high grade?

208

209 S: Oh, okay, I got you. Um, it always kind of depends on what my  
210 overall grade in the class is, and like, you know, if I know that I have a  
211 really good grade in that class, and I need to get like a 40 on the final to  
212 get a B or whatever, and there's no possibility of getting an A, then a  
213 40's good. It's, so ... I wouldn't try to get a 40, only, but whatever is

214 necessary to keep a grade that I have, or maybe go up, um. The, it's gotta  
215 be case by case, but I would say generally a, I would consider a B good.  
216 So an A is great, but a B is okay.

217

218 I: Do you feel that a grade curve would change your perception of  
219 success?

220

221 S: Uh, how so?

222

223 I: Like, pulling a number out of the air, 78. Say you got a 78%, but  
224 there's a grade curve, so you actually got a B. Does that still count as a  
225 succ ... a success to you?

226

227 S: Yeah. Whatever the letter grade is gonna be is how. Sometimes it's  
228 going by ... yeah. Uh, whatever grade is, whatever the letter grade is,  
229 how it influences that, definitely. So yeah, a grade does, I guess ... or a  
230 curve does influence my perception.

231

232 I: Okay.

233

234 S: To answer the question (laughs).

235

236 I: Let's say the person sitting next to you in class, you, you might know  
237 them, you might only kind of know them.

238

239 S: Mm-hmm (affirmative).

240

241 I: But you feel like they are way smarter than you are.

242

243 S: Mm-hmm (affirmative).

244

245 I: So, what happens if, when you get your test back, you just kind of  
246 happen to glimpse their score, and you actually did way better than they  
247 did? How do you react? And why?

248

249 S: Um, I definitely wouldn't like, gloat about it, but I'd feel pretty good  
250 about that. Um, if I perceived them as being, as being, a better student,  
251 or smarter, or whatever, in that particular class, or subject, and ... yeah, I  
252 definitely good about myself, for sure.

253

254 I: Okay. Why are you, why do you feel good about yourself for doing  
255 better than them?

256

257 S: Um, 'cause I would probably set kind of, have an idea of, if I know  
258 that they're like, better at, set that as like a bar? And then if I, and if I  
259 know where that bar is, uh, and if I do better than that, um, then ... If I  
260 consider them, like, their performance to be a really high bar, and I do  
261 even better than that, then that's kind of ... uh ... I, I would feel good  
262 about myself for doing better than I expected, because I would, use  
263 probably their grade as a little bit of a, uh, standard, I suppose.

264

265 I: Okay. Would you share with anybody else that you did better than that  
266 person?

267

268 S: Probably not like, maybe like, my roommates, but none of them are in  
269 mechanical engineering, probably don't know it. I wouldn't tell anybody  
270 who was like, uh, uh, who ... It could possibly get back, that I was  
271 gloating, I wouldn't do that. But.

272

273 I: All right.

274

275 S: Yeah.

276

277 I: Why don't you want it to get back to that person that you might be  
278 gloating?

279

280 S: Oh just kind of, it's rude. And like I know that it's rude, but maybe it,  
281 I don't know, I just wanna go ... I wouldn't wanna like, uh, think they, if  
282 maybe they did particularly bad on that exam or something, I wouldn't  
283 want it to get back and, and have them feel that way. So.

284

285 I: Would, would you care as much if say, you got a 99 and then got a  
286 92? So they still did well and got an A -

287

288 S: Right.

289

290 I: But you did better? Would you care as much if that got back to them?

291

292 S: If I got a, if ... no. Well, oh. If it got back to, yeah. I'd still feel bad,  
293 but in that case, I probably wouldn't be as excited. Or, I would still be,  
294 I'd be more excited for myself for getting such a high grade in general -

295

296 I: Mm-hmm (affirmative).

297

298 S: Than doing better than someone else.

299

300 I: Okay.

301

302 S: Maybe if it was more like, I saw that they got a 75, and I got like a, 88  
303 or something. I'm like, "Wow, I did really good," 'cause I consider them  
304 to be good.

305

306 I: Okay.

307

308 S: But if I, if I ... Like an 88's good, but if I got like a 99, I would just be  
309 like, "Wow, that's really great for myself." So.

310

311 I: Okay. So, why might you share it with your roommates? If you were  
312 pretty sure it wouldn't get back?

313

314 S: Um, because I'd just be proud of myself for doing better than what I  
315 consider, so I would consider them to be a good student and get good  
316 grades, and then I do better than that, then I'd probably get a hat's off for  
317 getting over that bar that I kind of perceive.

318

319 I: Okay. So let's say the next exam in that class you got back, and you  
320 don't feel like you've succeeded on that exam.

321

322 S: Mm-hmm (affirmative).

323

324 I: How do you react, and why?

325

326 S: Um, usually the first thing I do is kind of see how it will affect my  
327 overall grade? Um, to see what I need to put much more effort in this  
328 class to do well, or something like that. So I, I think my usual, uh, usual  
329 reaction is to go through it and kind of see what I did wrong, um, what I  
330 need to get better at, and then, uh, kind of judge how much more effort I  
331 need to put in the whole class overall. So that I can uh ... mitigate the  
332 effects of that bad grade, and then, and learn from it, and, uh, so that it  
333 won't just kind of continue down that path of bad grades. So, I can kind  
334 of fix it up, I guess.

335

336 I: Okay.

337



338 S: But usually it is disappointment. Initially. And then kind of, "Okay,  
339 well that's done with, so how am I gonna move on from it now?"  
340  
341 I: Okay. So what if the professor posted just, anonymous scores that  
342 everybody got in the class so you could see a distribution?  
343  
344 S: Mm-hmm (affirmative).  
345  
346 I: And you were pretty far in the lower end of that spectrum.  
347  
348 S: Mm-hmm (affirmative).  
349  
350 I: How would you react?  
351  
352 S: Um, I guess in part it would kind of depend on where that distribution  
353 is. If everybody was getting Bs and As and I got like a low B, or  
354 something, um, I would ... that would ... uh, then I wouldn't be as  
355 worried. But if like, I dunno, it was a more normal, standard distribution,  
356 and I was on the lower end of that, then I would definitely think about  
357 what ... Again, the ... kind of the same reaction as even just a general  
358 low grade is. Uh, thinking about how I need to move on from that. I  
359 think I've kind of gotten pretty good at not dwelling on that, not  
360 dwelling on getting a bad grade too much, I don't let it ruin everything,  
361 but I definitely consider how to move on from that point, and ... yeah.  
362  
363 I: Okay. So, what if the person sitting on the other side of you, in that  
364 class, maybe you know them, maybe you don't, but you just don't think  
365 they're as smart as you are. Maybe you don't even think they're very  
366 smart at all.  
367  
368 S: Mm-hmm (affirmative).

369

370 I: What if they got a considerably better grade than you did?

371

372 S: Um. Probably start kind of thinking about how I was studying, or how

373 I, um ... probably about the same way as if I was just, saw that I had a

374 lower grade in the class in general, amongst everybody else. Um ....

375 probably, yeah, so yeah I'd probably be disappointed initially and then

376 start thinking about, uh, what I need to do to change that. And how to

377 improve my long performance.

378

379 I: Okay. Would you share with anybody else that you got a not so great

380 grade on that exam?

381

382 S: Probably not.

383

384 I: Okay. Why not?

385

386 S: Um, 'cause nobody really wants to hear that I did really poorly on that

387 test. People will congratulate you if you do great, but if you do bad, like

388 it's just kind of awkward if, I dunno, if you tell somebody, I guess.

389

390 I: Okay. Does it matter to you if your peers think you're smart?

391

392 S: Probably. Yeah. Um, because if you're working with them you wanna

393 work with smart people, you don't, you don't wanna work with people

394 who aren't smart, or something, so. I would say yes.

395

396 I: Okay.

397

398 S: And, and being smart can mean different things, but it, you can be

399 smart in different subjects, but ... if you're working on something in a

400 particular subject, you wanna work with somebody who's smart in that,  
401 so.

402

403 I: What do you say that ... would you say the same ques, same answer if  
404 the question was, would you care ... Does it matter to you if your peers  
405 think you are not stupid?

406

407 S: I'd say yeah. I mean nobody wants to be considered stupid, so ... I  
408 think it's, I guess like the difference is, proving that you're not stupid is a  
409 little bit different from proving that you're smart, I guess? Or, not  
410 proving but, um, I mean in general just yeah, I think it's important for  
411 people to not think that you're stupid. But I think a lot of times the  
412 people who try to like, show that, they end up looking kind of stupid  
413 anyway.

414

415 I: (Laughs).

416

417 S: So (laughs), it's, yeah, probably don't ... I dunno. Just one of those  
418 things that you kind of probably shouldn't try to have an effect on. Is ...  
419 should kind of show for itself, or whatever.

420

421 I: Okay. Does it matter to you if your professors think you're smart?

422

423 S: Um, I would say so.

424

425 I: Why?

426

427 S: I mean, uh, 'cause, I mean if you're gonna use 'em for like a reference,  
428 for jobs or something, there's more to being a good worker, or good  
429 coworker than being just smart, but that's definitely a good, an important  
430 part of it, and if a company calls them up you want them to think that

431 you're smart. Along with other things, like having good communication  
432 skills, and working well with others, it's all that kind of stuff, but smart  
433 is definitely up there, especially in engineering.

434

435 I: Okay. So tell me about, what is it that motivates you to keep pursuing  
436 an engineering degree?

437

438 S: Uh, I guess I think that, uh, also I'm kind of interested in like, thermal  
439 systems, I guess is what you could call it? And I just think it's really cool  
440 the way that we take whatever fuel source and turn it into electricity,  
441 ultimately it's ... to do other stuff. I just think that flow of energy and  
442 work is really interesting. And that's kind of the, so that's the path that  
443 I've chosen, um, and definitely part of this still, like the financial  
444 promises that people make to, when you're like, choosing a school, and  
445 they're like, "Oh yeah, engineers make this much," and so you're like,  
446 "Okay, that's, that sounds really cool. That sounds kind of like  
447 something that I want for myself." Uh, so that's part of it. So the promise  
448 of a better future, and just it's also something that I'm interested in  
449 generally, um. I don't think I would still be in it if I found out I really  
450 hated it, and I got, I, so the money is definitely there and everything, but  
451 I don't think it's a, uh, the ultimate deciding factor. I wouldn't want a job  
452 that I do for the rest of my life and I absolutely hate it. So. I guess it's,  
453 yeah, the interest and then ... oh, and then the kind of challenge, too.  
454 Now that I've gotten better at facing challenges and overcoming them,  
455 academically, in, you know, all that kind of stuff. Uh, it's definitely  
456 much more enjoyable than, like my current job at a restaurant where I  
457 kind of just do the same stuff, and it's kind of boring, and not very  
458 intellectually stimulating, I guess. So it's part of the challenge, and then  
459 interest, and, and you can make money doing it. So, why not? If I can.

460

461 I: All right. Now let's say you're making a pie chart of your motivations  
462 as a student to study and work hard and such, what percents would you  
463 say you are motivated by your grades, versus you're motivated by your  
464 desire to learn the subjects matter?

465

466 S: I'd probably like say, 60% understanding, 40% grades, 'cause I think  
467 that the grades generally follow the understanding? Maybe 75/25 or so,  
468 but I think it's definitely more about understanding the material, and  
469 then if you have the understanding, then, in theory you should do well  
470 on the homework, you should do well on tests. As long as like, you  
471 show up and stuff. Then the grades will follow.

472

473 I: Okay. Is that the same for all of your classes?

474

475 S: No, I would say that kind of depends on how the grading is done.  
476 How it, how the ... if the ... If like, the homework's not graded, you  
477 should probably still do it, 'cause that's, that's where you get the  
478 understanding for stuff. So I, so it really just depends on class to class,  
479 how they're set up and maybe what the material is, I dunno.

480

481 I: Does it change with subject matter at all?

482

483 S: Um ...

484

485 I: Like would it matter if it was say, something not for your major, but  
486 for a K-State 8 courses?

487

488 [Knocking, researcher was required to pause the interview]

489 I: Okay. Sorry about the interruption.

490

491 S: That's fine.

492

493 I: Uh, I believe the last thing I asked was, does your, uh, pie chart of  
494 learning versus grades motivations change if it's a class that's not  
495 required for your major like K State 8?

496

497 S: Yeah. If like I guess if I perceive it as something that isn't necessary  
498 to moving forward, like, I took a marketing class over the summer. I was  
499 definitely more just grade focus on that one I think. And I think that one  
500 ... going after those grades kinda of led to more of learning from the  
501 stuff, cause it was a one off thing. If it's something where I know that  
502 I'm gonna be applying this later on, I do need to understand it, then I'd  
503 say the understanding that leads to grades, for sure.

504

505 I: Okay. In what ways are your grades important to you?

506

507 S: Um, [company] had a lot of ... I mean, every company that you apply  
508 for... I mean that, I personally think they kind of look at GPA first and  
509 foremost and if that's good then they'll go further but that's kind of their  
510 first thing they look at. So for me, grades are important to the extent that  
511 other people care about them. And it's a good metric for your  
512 understanding I suppose but I think what really matters is what others  
513 will look at them and think about them if, if they have like influence  
514 over whether I get a job or whatever or go to grad school. Then that's  
515 kind of important.

516

517 I: Okay, in what ways is learning important to you?

518

519 S: Um, I guess that's kind of a tough one because it's just, I don't know, I  
520 don't really think about that, it's just something that you have to do, have  
521 to learn more and have a greater understanding of things. Um, I guess in  
522 the context of school it's important because, um, it's the whole reason

523 you're here. Uh, and it's important to build up the knowledges, like, like  
524 I guess kind of at some point in school I realized that everything learned  
525 now you're learning because you have to use it later and so, the things  
526 like I'm learning now are important to understand and internalize  
527 because you'll be using them later on whether it's in more learning or in  
528 applying it in a job or, or whatever, it has to do with what you've  
529 learned.

530

531 I: Okay. So, largely sounds like you wanna just be effective at whatever  
532 you're doing.

533

534 S: Right. Um, I'd say that's pretty much, right? Yeah.

535

536 I: So let's say you're enrolling in classes for next semester and there's  
537 one class that you need to take but there's two options available and  
538 they're taught by different professors.

539

540 S: Mm-hmm (affirmative).

541

542 I: So section-- you you've heard both these professors, maybe you know  
543 them, maybe by reputation,

544

545 S: Mm-hmm (affirmative).

546

547 I: So you know section A professor is gonna have a really difficult class.  
548 You're gonna have a hard time getting a good grade in that class, but you  
549 know that you'll come out having learned a lot. Section B professor  
550 you're gonna have a really easy time getting a good grade in that class  
551 but you might not learn as much.

552

553 S: Mm-hmm (affirmative).

554

555 I: Which section would you enroll in assuming they both worked for  
556 your schedule?

557

558 S: I think that I would also have to consider what the other classes are  
559 and what their reputations are, whether, if I'm taking all hard classes I  
560 might go for the easy one. Say that, I'll put it up on myself to make sure  
561 that I really understand the material as well. If I was having a bunch of  
562 other easy easier classes then I'd probably go with the hard one to, uh,  
563 because I'd probably perceive that as being of more value learning wise  
564 but it, but I think I'm at a point, er, I personally could say that I, if I go  
565 into this easier class, I'll still come out having learned what I needed to,  
566 and having understanding what I need. But I-I think I would want to go  
567 for the easy one because that's kind of the obvious one but I think I'd  
568 probably go for the harder one, just in general, because, I think, that I  
569 would have a greater understanding, especially if it was something that I  
570 really cared about, like, if it was a, if I was taking Thermo 2 and I heard  
571 that this professor is really hard but there, you'll come out learning a lot  
572 and this one's easy, then I'd probably go for the hard one. If I'm just  
573 going for like, marketing, and I just, it's gonna be a one off thing I'll go  
574 for the easy one.

575

576 I: So, are you saying it both depends on subject matter and on other class  
577 load?

578

579 S: Yeah, I'd say so, for myself.

580

581 I: Which one do you think is more important?

582

583 S: Uh, subject matter, I, cause I would have a harder time deciding  
584 which one if it was, uh, or sorry, I would have an easier, trying to



585 process aloud, um, yeah, yeah if it's a subject matter I don't care about as  
586 much I'd probably have an easier time choosing the easier, the easy  
587 professor than if it's a hard class I'd have to like, if there's a class that I  
588 care about more, I'd spend a lot more time analyzing the options than if  
589 it was, uh, kind of just a requirement that I don't particularly care about.

590

591 I: Okay. So, tell me about your strategies when you study and try learn  
592 material?

593

594 S: Um, I go and sit and, I guess kind of a general overview is I go sit and  
595 for hours work on the, the assignments usually because I tend to trust the  
596 assignments are representative of the material that I need to understand  
597 and know how to use. Um, so I do that and I'll use my, I take notes in  
598 class, um, and I think that I've gotten to be better at understanding what  
599 is important to write down so that I'm not writing down absolutely  
600 everything but I'm getting the things that I'm gonna need to know later.  
601 Uh, so basically I go and do assignments, um, and try to work them out  
602 between my notes and the book and other online material that I can find  
603 or whatever, um, YouTube videos or whatever so that's usually, that's  
604 been the method that I think is, helps me out the most is just doing  
605 homework. Um, I'm trying to think if there's been any classes where I've  
606 done different methods but, that's pretty much always been, been how it  
607 is.

608

609 I: Okay. How did you come to use that strategy?

610

611 S: Uh, I wasn't doing so well in a couple classes, like really bad, and  
612 decided that I needed to buckle down and so I just went and, I think it  
613 was, again the differential equations class or I realized that just going to  
614 lectures and getting a basic understanding of the things wasn't gonna cut  
615 um tests and stuffs ever, really important for grades. And uh, I decided

616 to finally heed the professors' uh, uh, recommendation that you do the  
617 homework and so I did the homework and I realized that I learned a lot  
618 from it. And actually, went just beyond the basic concept, conceptual  
619 understanding of things to really understanding it more wholly and how  
620 to apply it, um, and I just, so I just literally go sit on the hill for hours  
621 and just work on it, just till I understood it and got the answers right and  
622 everything.

623

624 I: Okay. How do you think that these strategies have changed over time?

625

626 S: Uh, well initially in school, I guess, my strategies were basically  
627 nonexistent. I would go to class and sit through lecture and maybe  
628 hurriedly do half of the homework right before it was due and for a  
629 while that actually kinda worked. Uh, it wasn't the best for me but then I  
630 would like take the test and do fine on it and then classes got harder and  
631 that didn't work anymore and uh, that's when I kinda got into my new  
632 method of just having to sit down and kind of crank through it all. It's  
633 been, and I've just found it that I have spent a lot of time on it. I don't  
634 think I'm a very efficient learner so I know that in order to learn I have  
635 to put a lot of time into it, a lot of effort.

636

637 I: Okay. When, like, was it freshman/sophomore year that you realized  
638 you needed to sit down and crank through?

639

640 S: It was like towards the end of sophomore year, I think. I think it was,  
641 uh, Fluid Dynamics and Diff Eq in the same semester, like okay, this  
642 isn't gonna cut it anymore. I have to figure something out.

643

644 I: Okay. How did you feel when you realized you actually did need to sit  
645 down and crank through it and couldn't just, kind of, coast through.

646

647 S: Um, I guess you'd call it like a come to Jesus moment where I was  
648 like okay, this is kind of it. I don't know, cause I think I was kind of in  
649 denial for a while about, if that was the case. And in that moment I was  
650 kinda like okay this really has to change and I need to do something  
651 substantially different. Um, so it's a little bit of kinda self-acceptance  
652 and relief in a way, realizing that, um, had to go about it differently.

653

654 I: Okay, why would you say that it was a relief?

655

656 S: Um, kind of in the same way that like if you absolutely do terrible on  
657 a test you're like, well okay that's in the past now, I can't do anything  
658 about that so what am I gonna do about it in the future? It's just kind of  
659 refreshing, it's kind of a new start I guess. Similarly you kinda, I don't  
660 know, I guess like sunk cost? You kind of put it behind you, you're like  
661 I'm not gonna think about that anymore, I'm just gonna move forward.  
662 And not, and like remember it, but don't dwell on it. So, that's part of  
663 why it's a relief because at that point I kinda decided to not, uh, be that  
664 way and that it wouldn't have to effect me in the future.

665

666 I: Okay. In general, how much effort would you say that you put into  
667 your classes?

668

669 S: Um, in general, I guess, a lot. It's been harder without Hale open, but,

670

671 I: Oh I believe it.

672

673 S: Yeah, cause I would spend all, entire days in there just getting  
674 through work um but, in general a lot just cause I know that I have to if  
675 I'm gonna be successful, if I'm going to learn the material and get the  
676 grades that I need.

677

678 I: Okay. Do you feel like you learn more from classes that you have to  
679 put more effort into?

680

681 S: Uh, not necessarily. I mean, in some classes there are just high, more  
682 difficult concepts and so I know that I need to put a lot more in. Other, I  
683 was kind of surprised about how much I did learn from marketing class,  
684 that marketing class that I took that I didn't have to put a lot of effort  
685 into it. It did just kind of, information being presented to you and you're  
686 like oh okay that makes sense and other classes are, I don't know, other I  
687 guess more difficult and so, can you repeat the question actually? I'm  
688 kind of getting off, on a tangent.

689

690 I: Do you feel that you learn more from a class that you have to put more  
691 effort into?

692

693 S: Not necessarily, I don't think.

694

695 I: Okay, and why do you feel that's the case?

696

697 S: Oh, um...I think like I said, it just depends on how hard it is. If it's a  
698 harder material then I know that I'm gonna have to put a lot of effort into  
699 learn enough but if it's an easier class I can, I know I can work a little bit  
700 less and, and learn what I need to.

701

702 I: Okay. Compared to your peers, do you feel like you learn more when  
703 you put more effort in to something than your peers do?

704

705 S: No, I think I have to put more effort in to stuff usually to get stuff out  
706 of it but I don't work with a lot of peers on homework. I kind of do a lot  
707 of stuff on my own, um, at least, so yeah. So I don't think I have really  
708 good, not sure what to go off of, so it's difficult for me to kinda, uh, to

709 say. But I think that I have to put in a lot more than, I perceive myself as  
710 having to put in a lot more effort than most people do, to achieve similar  
711 goals.

712

713 I: Why do you think that is?

714

715 S: Um, cause I know that I, I guess I'm kind of equating effort into time.

716 I know that I have to put a lot of time into it. Um, but, that's cause I, I

717 know that everyone, kinda the stereotype is that Engineers spend a lot of

718 time in school cause it's true and I, I think that I have to, end up having

719 to put a lot in to get the same out, output. I'm not really sure why I think

720 that but, I kinda have that idea in my head.

721

722 I: Okay, so think about a subject or a class or something that you took

723 where you had to put in a lot of effort to do well. Tell me what that looks

724 like.

725

726 S: Um, I guess I could go back to differential equations where that was,

727 um, me studying in the library and just going through all of them

728 problems and all the, going through the homework two or three times

729 before tests and uh, like planning out days ahead of what I was gonna

730 work on to ensure that I covered all the material and to understand it

731 really well before the exam came. Cause I knew that it was gonna be

732 difficult and I had to be prepared for it. Um, can you repeat the

733 question?

734

735 I: Tell me about a subject or a class where you had to put in a lot of, put

736 in a lot of effort to do well.

737

738 S: Uh, so then there was, so that was a class where I had to put in a lot of

739 effort cause it was, it wasn't really, I mean it was a lot of material but it

740 was just difficult and then like the [class] that I had to put of time and  
741 effort because there was just a lot to it. Writing pages of stuff to get a  
742 single number so that one I had to put a lot of time into. Then we also  
743 did like a lot of, we had to write programs and that so that was more just,  
744 that one wasn't so hard for me but I just had to put a lot of time into  
745 getting through. There's just a lot of stuff to churn through to get the  
746 result that you want.

747

748 I: How did you feel about needing to put so much effort into those  
749 classes?

750

751 S: Um, I mean I kind of expected it but when I did put the time into it  
752 and then got good results back it feels really good and then so it's kind of  
753 like, I don't know, going to the gym or something where you, it kind of,  
754 I don't like it but I know that I'm gonna like the results. So you just, kind  
755 of, get through it. And knowing that it's good for you in the end.

756

757 I: Okay. What do you get out of those experiences?

758

759 S: Uh, learning to persevere through difficult subject matters or difficult  
760 problems, um, there's like this kind of all-encompassing word that I'm  
761 trying to, like, remember. Um, yeah I'm really drawing a blank but just  
762 uh like a greater sense of, like my own responsibility uh for my own  
763 performance. Um.

764

765 I: Gratification?

766

767 S: Maybe. What was the question again?

768

769 I: What do you get out of those experiences?

770

771 S: Of like sitting and like doing work for hours, er, specifically  
772 experiencing?

773

774 I: Sure, just the, the classes that you had to put in so much effort to do  
775 well.

776

777 S: Okay, I mean you feel good about it in the end when you come out on  
778 top and you know that you did well. So yeah, gratification being one.

779 Um...that's probably about it. It would be gratification would be a good  
780 one, for sure.

781

782 I: Okay. Now tell me about subject or a class where you didn't have to  
783 put in a lot of effort to succeed, it was actually pretty easy for you.

784

785 S: Mm-hmm (affirmative). I took appreciation of architecture which I  
786 actually really enjoyed that because it was interesting, but I don't, you  
787 don't have to do anything in that class. You go and sit there, most people  
788 don't, but I actually like I actually like listening to the stuff so I went.  
789 And then you take three really easy tests and that's it. There, it's almost  
790 no effort. Um, but I enjoyed it because I liked the subject matter. If it  
791 was a class right when I did that and it wasn't really something I just,  
792 absolutely hated hearing about, it would be terrible but... I don't know if  
793 that's like exactly what you're looking for but...

794

795 I: It's fine. How did you feel about not needing to put in a lot of effort to  
796 that class?

797

798 S: It was a nice little break in my day to not have to go and think for a  
799 while. I just get to like look at pictures and hear about stuff.

800

801 I: Would you feel it any differently if, instead of appreciation of  
802 architecture it was, I don't know, appreciation of whiteboard marker  
803 colors? (Laughs)

804

805 S: (Laughs) Probably, I think that would, that would be just that would  
806 just be miserable. If I didn't have to put effort into it I probably wouldn't  
807 go to be honest, if I didn't like it. But uh, yeah no, that would be bad. I  
808 think it's just cause, I don't know, architecture is kind of interesting and,  
809 and there's history wrapped into it and all kinds of stuff so it's just. So it  
810 was intellectually stimulating in that way that you're kind of getting a  
811 new understanding of the world but you don't have to put in any effort,  
812 so that was kind of nice.

813

814 I: Okay. What did you get out of that experience?

815

816 S: Uh, I guess just personally it was kind of just, I mean for one thing it  
817 was just a nice little break but it was also something that, I don't know if  
818 you'd say like I cared about it, but it was like, it was something that was  
819 interesting and so I enjoyed it. I got enjoyment out of that, those classes,  
820 that class in particular.

821

822 I: Okay. Have you ever had a class that was all or nearly all attendance  
823 based? For me I had Math 101 and there was one assignment the whole  
824 entire time, no tests. We just had to show up and we were...

825

826 S: Really. No, I've had like a, a recitation class I didn't go to ever cause I  
827 didn't understand the instructor. I think he was Russian, or something, so  
828 I was like I'm getting nothing out of this. So I didn't go to that in that  
829 particular section of that class was attendance based entirely. Um, but  
830 other than that I don't think so. I think a lot of them were more based on  
831 material. I've had classes where attendance, like you got like a maximum



832 number of absences or whatever but I don't think I've ever had one that  
833 was just entirely attendance based.

834

835 I: Okay. So, think about people you know. Uh, specifically students.

836 And think about somebody who succeeds in school but has to put in a lot  
837 of effort to that, they're like always hitting the books,

838

839 S: Mm-hmm (affirmative)

840

841 I: What does that tell you about how smart they are?

842

843 S: I think it shows that they, I don't, I think it shows that they're smart in  
844 that they know that they need to put in the effort. Um, I don't think that  
845 reflects on how well they know material, if anything, uh, yeah I don't  
846 think it reflects on whether they're understand stuff but I know it reflects  
847 on they know themselves and they know what they need to do to be  
848 successful. So I think it, in that sense, shows that they're smart cause I'd  
849 consider that smart if you know that you need to put in this effort and  
850 you go and do it.

851

852 I: Okay. How bout now, another student that you know, think about, and  
853 they just, they succeed but they barely put any effort in and all, they're  
854 almost never studying or anything.

855

856 S: Mm-hmm (affirmative)

857

858 I: What does that tell you about how smart they are?

859

860 S: I mean it sounds like they're a savant, personal opinion, um, cause it's,  
861 yeah I would consider that smart. If he, are able to just kinda see stuff  
862 one time and you're good, that's, like I actually do know somebody like

863 that, he, went to high school with him and he was a good friend and he  
864 just, I don't say he doesn't have to put effort in, there's probably a lot of  
865 effort that I don't see him putting in and stuff, but he just gets it  
866 everything. And his, anything that he touches and puts a little bit of  
867 effort into, is immediately, not immediately, but he's good at it. And I,  
868 he's a genius I think, so. I definitely see that as smart but I don't see  
869 having to put a lot of effort as not being smart.

870

871 I: Okay, so just different types of smart.

872

873 S: Yeah.

874

875 I: So, now think about a specific time that you received feedback that  
876 you were not performing to expectation.

877

878 S: Mm-hmm (affirmative)

879

880 I: How did you respond?

881

882 S: I just kinda decided, thought about what I had to do to improve, um.

883

884 I: Tell me about the situation itself.

885

886 S: Well it was kind of when I was, end of my sophomore year and, the  
887 major catalyst was that I got a paper that was like, yeah we're not gonna  
888 give you student loans anymore if you keep doing this. And, and that  
889 was kind of the major, that was really it and I was like okay I really need  
890 to analyze what I'm doing wrong and how to fix that and that actually  
891 implement that and get better. Um, but, yeah I'd say that's part of it.

892

893 I: Okay. So, I suppose you responded by trying to fix it?

894

895 S: Right, yeah. By seeing what I could do to correct the problem and if  
896 not, repeat it.

897

898 I: Okay. What was the outcome of your response?

899

900 S: Uh, my grades improved a lot and I was generally less stressed out  
901 and, um, just kinda everything improved, across the board really. Um, I  
902 had less free time but that was fine, so.

903

904 I: Do you feel that the outcome of that action still effects you today?

905

906 S: Yeah, because I still have the same habits that I developed then. Um,  
907 so I still see good results for my effort and all that kind of stuff, yeah.

908

909 I: Okay. Did you learn anything from that experience?

910

911 S: Uh, I learned that putting in just enough effort wasn't gonna be good  
912 enough anymore, that I needed, somebody need to put in a lot of effort  
913 to, well for me a lot of effort is just enough, or you know, I guess but  
914 uh... I'd say that's probably about it.

915

916 I: How did you feel about that sort of epiphany?

917

918 S: Um, it was, it was relieving, feeling where you're kinda like that's  
919 that. That's kind of how things have to be and what's in the past is in the  
920 past so you kind of just move on from that.

921

922 I: Okay, well what advice would you give to a student or someone who's  
923 struggling with that same situation or a similar one?

924

925 S: I actually haven't thought about that because I'd say do you're  
926 homework but they probably wouldn't really take that advice cause I  
927 didn't for a lot, a number of years, or a couple years I guess. People , you  
928 know, just like oh you gotta do your homework, well, I didn't. Um,  
929 maybe, like sit down and really have a one on one about like the actual  
930 consequences of what their actions will result in. Um, I think you would  
931 have to have like a very personal interaction about that, it couldn't just  
932 be like a, uh, professor standing up in front of the class and say do your  
933 homework probably isn't probably gonna cut it.

934

935 I: So you would say do your homework but the delivery is just as  
936 important?

937

938 S: I think, the delivery, you're right, need to be very personal interaction,  
939 uh, to really get the point across.

940

941 I: Okay. Do you think you would've responded well to such an  
942 interaction?

943

944 S: I like to think so, um, but I don't know it's hard to say.

945

946 I: Okay. Do you care if your peers judge you when you do poorly?

947

948 S: If they're judging, yeah. I mean if they don't really judge and they  
949 know I don't care but if they're being rude about it yeah.

950

951 I: Okay, why do you care?

952

953 S: Uh, cause, I don't know, maybe, maybe I just had a bad week and  
954 wasn't able to get everything done. It's hard to know somebody's whole

955 situation or why they didn't succeed so, and because I think it's kinda  
956 mean to do that to somebody.

957

958 I: Okay. How about your professors. Do you care if they judge you  
959 when you do poorly?

960

961 S: I mean in some ways that's kind of their job, I guess. Um, but, maybe  
962 if it was more of a more of a criticism, and then like maybe, like a  
963 suggestion, like here's a path forward from that, not as much, but like, I  
964 don't think just berating somebody for something is okay.

965

966 I: Alright, so you don't mind if a professor comes and says you're doing  
967 poorly, fix it, but you do mind if they say you're doing poorly, why are  
968 you in here?

969

970 S: Right. That's a pretty good distinction, yeah. And I think, even going  
971 further than just saying you need to fix it but you're like here's some  
972 resources to help you fix that or something.

973

974 I: Okay, so it's the professors job to help you.

975

976 S: Not, well...

977

978 I: Or at least make help available to you if you decide to take it?

979

980 S: Yeah, I think it's, I mean as teachers I think it's a little bit their  
981 responsibility to kind of, uh, I don't know that's kind of difficult. Um,  
982 maybe it's not necessarily their responsibility to take the initiative but if  
983 they're going to, and say like you're doing really poorly then maybe,  
984 they're gonna single you out and say that maybe, they can probably also  
985 make a suggestion as well. Yeah.

986

987 I: Okay, so do you feel that you learn more from an experience that's  
988 challenging or not challenging?

989

990 S: Uh, probably definitely challenging. Depends, especially in the  
991 subject matter. Something that challenges you and then, you overcome  
992 that then yeah I think definitely learn more from that then if you're just  
993 kind of presented with something and then yeah, I'd say challenge makes  
994 you, makes you learn more but it also depends on, uh, the material  
995 specifics, specific material. But, a challenge, if you're considering  
996 different situations but the same material, definitely the challenges, uh,  
997 you learn more from that.

998

999 I: Okay. Do you, does it matter to you if you succeeded during that  
1000 challenging experience?

1001

1002 S: If, if the grade's based off of that, yeah. Um, if you learn from it then  
1003 I'd consider that a personal success either way. If you're in school, at  
1004 least, then I think the grade matters because that's, what the whole  
1005 judgment systems based off of but, uh, as far as personal success, not  
1006 necessarily.

1007

1008 I: Okay. So, if you were presented with something that you were  
1009 basically just graded on participation and you had a choice between and  
1010 easy project and a challenging project, um, but you're gonna probably  
1011 get the same grade either way, which one would you choose?

1012

1013 S: Probably the one that's a little more challenging. Um, if it's something  
1014 that I really care about learning and understanding it well. Uh, then in  
1015 that case I think I'd probably go with the more difficult one.

1016

1017 I: Is there sort of circumstance in which that answer would change?  
1018  
1019 S: If it was something that I didn't really particularly care about learning,  
1020 uh, then I'd probably just go for the easy one so that I can just get  
1021 through and focus on other stuff instead.  
1022  
1023 I: Okay. So now that we've talked to all these different ideas related to  
1024 motivation and effort and challenges, how would you summarize what  
1025 you've shared with me?  
1026  
1027 S: Um, that's hard, um. I wish I had notes written down that I could go  
1028 through and (laughing) form a summary from that. Uh, what were the  
1029 kinda, the subjects again?  
1030  
1031 I: Motivation, and effort, and challenges.  
1032  
1033 S: Okay. I guess that motivation is really important in wanting to  
1034 overcome challenges, um. And, uh, just like in general or for me myself?  
1035 Or, okay.  
1036  
1037 I: Sure.  
1038  
1039 S: Um, I guess to myself that you have to put a lot of effort into  
1040 challenges to overcome it and also need the proper motivation to, to  
1041 want to put that effort into it, um. And if you don't have that motivation  
1042 you're not gonna put the effort in and you're probably not gonna  
1043 overcome whatever challenges you face. So motivation definitely needs  
1044 to be there. Um, and then you kind of need to know about yourself about  
1045 what kind of effort you need to put into stuff or how much, um, yeah I  
1046 think that's kind of it for that.  
1047

1048 I: Okay. Did you gain any insights from our discussion?  
1049

1050 S: I think I had to think about myself a bit, yeah. Um, cause like a lot of  
1051 the stuff where I've thought about, like, my own motivations and, uh,  
1052 like, uh, when I learned how, like I needed to put a lot of effort into  
1053 stuff. I've kind of already gotten through all of that but, um, I definitely  
1054 think I had to think about myself for at the beginning when we were  
1055 talking about my real motivations for being here and stuff. There's a  
1056 little bit in there that I could think about, um, but not, more definitely  
1057 than thinking about like how much effort and stuff. I've definitely had to  
1058 think about that for myself a lot. Um... so yeah.  
1059

1060 I: Okay. Anything else you want to share?  
1061

1062 S: Not particularly.  
1063

1064 I: Alright.  
1065 [Participant left, but came back shortly after saying he had more to share  
1066 after thinking about our discussion of Framework]  
1067 I: All right.  
1068

1069 S: I guess I remember being like, really young, early in elementary  
1070 school. Uh, it's like one of the few moments from my childhood that I  
1071 remember is when I realized, like, I could learn something really, like,  
1072 realized that it was really possible to, like, grow your knowledge of  
1073 something. We were doing stuff, like, I don't know,  $3x+8$  is like over  
1074 here, and you're got, like, blocks to represent that. Then over here you've  
1075 got, like,  $2x+$  whatever, and you kind of move them around-  
1076

1077 I: Mm-hmm (affirmative).  
1078



1079 S: There is x, there's your answer, and I kind of remember that clicking  
1080 for me and realizing, like, you, I don't know, that stands out in my mind  
1081 really well for some reason. I don't know, it was either, like, first or  
1082 fourth grade or somewhere in there, so it was like, pretty young. But ...

1083

1084 I: I think they taught us multiplication in third grade.

1085

1086 S: Third grade? Okay. So, it might have been fourth grade because ...  
1087 reason, like equations and stuff. I, I don't remember exactly, I kind of-

1088

1089 I: That sounds right from what I remember.

1090

1091 S: But it was like some table thing, you had blocks and move them  
1092 around and, something like that, but I remember that really standing out  
1093 in my mind as, like, a moment where I was really proud of myself for  
1094 understanding a new concept that was more complicated than just  
1095 memorizing a table of multiplication stuff, where it's like  $3 \times 5$  is 15 and  
1096 you just, kind of ... I don't think anybody really understood that stuff, I  
1097 think we all just kind of memorized it. But like, understanding  
1098 something completely new with taking this equation and reducing it  
1099 down to a single answer, uh, really stands out in my mind for some  
1100 reason. So, I just thought maybe that was, I don't know, pertinent to the-

1101

1102 I: That's fine.

1103

1104 S: Whether people develop the kind of mind set that you can grow and  
1105 stuff, younger if that matters or not, so. I don't know, thought I'd share  
1106 that.

1107

1108 I: Okay, thanks (laughs).

1109

1110 S: Mm-hmm (affirmative), so sorry to, like, barge in and-  
1111  
1112 This interview was interrupted twice: once when someone knocked on  
1113 the door and once because we finished and the participant returned.

1     **Interview Transcript 7: Geoffrey**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/3/2018

4     Transcribed by: Rev.com

5

6     Interviewer: All right. So our goal today is for us to have a detailed  
7     discussion about your beliefs about or perceptions of the nature of your  
8     intelligence. The discussion will inform my understanding of the  
9     perceptions of engineering students, and will help future decisions about  
10    the undergraduate engineering experience, and how it can be improved  
11    for all students. I want to hear your own thoughts and perceptions. I'm  
12    expecting that they will be different from the thoughts of others. And  
13    there is no right or wrong answer. I just want to know what you think.

14

15    Student: Okay.

16

17    I: I aim to understand your perspective, so I will ask questions like  
18    "What do you mean by that?" These kinds of questions can end up being  
19    a bit awkward and may require you to reflect on what you've  
20    experienced, so I will leave purposely long pauses after my questions.  
21    Take your time. Let me know if you need any clarification. Any  
22    questions?

23

24    S: No.

25

26    I: All right. So tell me about yourself as a student.

27

28    S: Um, I have issues with setting aside time. Study habits basically are  
29    pretty poor. Um, high school was really easy, so I did not develop study  
30    habits there. Kind of a shock when I got to college and I actually had to  
31    study for stuff, um, even though I was a 4.1 student in high school. Um,

32 but first couple years of school I got ... of college ... I got through that by  
33 going to office hours a ton. Like a lot. Um ...

34

35 I: Did you say off what?

36

37 S: A lot.

38

39 I: You-

40

41 S: I went to office hours.

42

43 I: Office hours. Okay.

44

45 S: I went to office hours frequently. Like for Calc 1 every week without  
46 fail. That's how I passed the class. Um, so yeah. I have to work hard to  
47 get the grades that I do, which are not ... Currently I'm actually on  
48 academic probation because I let myself take an F in a class last  
49 semester. So I'm not like worried about the academic probation. I  
50 should've withdrawn from the class. However, for other reasons I cannot  
51 have less than 12 hours 'cause I live in [university housing], and so if I  
52 drop then I'm kicked out. So ...

53

54 I: Gotcha. So what does it mean to you to be a student with poor study  
55 habits?

56

57 S: Um, I really hate doing homework and frequently underestimate the  
58 time, um, that I should take to study for a test. Usually I only start a day  
59 or two before. Two days would be out of the norm I would say. Um, and  
60 I usually turn out knowing less about the material than I had thought.  
61 And then it- it frequently becomes damage control, um, trying to salvage  
62 whatever grade I can out of a test.

63

64 I: Okay. And how 'bout a student who has to work hard, what does that  
65 mean to you?

66

67 S: I'd say most hard work in school can be ... it- it- it's just a time  
68 commitment basically. Um, if you put in the time, if you read the  
69 material and if you do the homework, um, and you I mean spend a lot of  
70 time doing that, I think that's hard work. Um, and then making extra  
71 efforts to go to office hours. Um, so I- I guess basically I equate time  
72 with work when it comes to school.

73

74 I: Okay.

75

76 S: For the most part spending enough time with a subject is enough for  
77 me to learn. It's not like I'm ... Does that make sense?

78

79 I: Mm-hmm (affirmative).

80

81 S: Okay.

82

83 I: So let's say you succeed on an exam. You just ... you get your grades  
84 back and you feel like you've succeeded.

85

86 S: Yeah.

87

88 I: Uh, how do you react, and why?

89

90 S: Um, let's see. I'd say my typical reaction is a lot ... I mean it makes  
91 me feel happy at first, and usually, I'd say unfortunately, and I might be  
92 being overcritical right now, but usually it means I think, "Oh, I can  
93 blow off the rest of the class. This class is easy. I got it." And ... (laughs)

94 and that comes back to bite me on the next test. Um, so- so usually  
95 overconfidence is my reaction to- to a successful test, I would say.

96

97 I: All right. What does it mean to be a success on an exam?

98

99 S: Grade-wise, I consider anything 85 and above to be pretty good. Um,  
100 I'm happy with it. Um, if I ... I don't know. If I successfully feel like I  
101 completed problems that I had studied for then I consider that  
102 successful, but if there was a problem that, "Oh, he threw that on there  
103 and I had no idea," I don't really hold myself accountable for- for that  
104 kind of thing. So if I do well on a test except for the problem that was a  
105 curve ball, then I still consider myself somewhat successful.

106

107 I: Okay. Does a grade curve affect your perception of success on an  
108 exam?

109

110 S: To an extent, but I would say that is a result of our grading system  
111 just being get the grade, get through the class. And that's kinda my  
112 mentality. I don't like when I'm ... you know, when I fail the test but get  
113 curved up to a C. I've actually had a class that I failed but curved up to a  
114 C. It was at [university]. It doesn't feel good. I don't consider that  
115 success. Like on my ... like for me. I passed the class, yes, but I still did  
116 crappy.

117

118 I: All right. So what if the person sitting next to you, you consider them  
119 to be way smarter than you are. And let's say you glimpse their score or  
120 whatever, and you did better than they did. How do you react?

121

122 S: Um, I guess doesn't really affect me all that much. Uh, I guess for me  
123 I would understand that there is- there's something going on in their life  
124 that maybe caused them to be unable to study or something. I would

125 think of some reason that ... I mean, I don't know. I just happened to do  
126 better this time. It doesn't make me feel good that I did better than them  
127 or anything like that.  
128  
129 I: Okay. Why not?  
130  
131 S: Um, just because like there's- there's any other- any number of  
132 circumstances that could've taken place that caused them to do worse.  
133 And I know that I mean some- some subject material some people  
134 understand better. So maybe I had a better understanding of fluid statics  
135 than they did, but they do better on another fluids example that I can't  
136 remember. It's been a few semesters, so ... but do you understand what  
137 I'm saying? I just happened to be better ...  
138  
139 I: Maybe it's just not their particular ...  
140  
141 S: Yeah, it's not their cup of tea. Sure.  
142  
143 I: All right. So would you share with anyone else that you did better than  
144 that person?  
145  
146 S: No.  
147  
148 I: Okay. Why not?  
149  
150 S: Uh, I just don't think that would be a charitable thing to do. Respect  
151 for other people's reputation is ... and just respect for other people in  
152 general would keep me from doing that.  
153  
154 I: All right.  
155

156 S: I mean if- if I was talking to somebody else who did poorly on the test  
157 I might say, "Oh, well, you know, [A] did poorly as well. There's no  
158 need to feel down about it." That's ... like that might be a circumstance  
159 for which I might share somebody else's score, to make somebody else  
160 feel better. But as far as bragging goes, no, I wouldn't.

161

162 I: Okay. Would you share with anyone else that you did well on your  
163 exam?

164

165 S: Yeah. I usually do when I- when I do really well it's like, "Yeah,  
166 yeah!."

167

168 I: Right. Who do you share with?

169

170 S: Uh, I've got two of my best friends that usually ... Like the other day I  
171 did well. I aced a [class] quiz, so I texted 'em through a group chat, [A]  
172 and [B], "I aced my test."

173

174 I: Why them?

175

176 S: Uh, they're both academically-minded and they would care. If it's a  
177 big test, um, then I'll actually tell my family, my little brother and my  
178 parents, 'cause if it's a big test I usually ask them to pray for me  
179 beforehand. Um, and so if they pray for me I want them to know, uh,  
180 how well I did. (laughs) It's like thank you guys.

181

182 I: Prayers came through.

183

184 S: Yeah.

185

186 I: So what if you did not succeed on an exam? How would you react,



187 and why?

188

189 S: Um, well, I know for ... I know pretty well that I failed a controls  
190 exam on Thursday. Yeah. And I just know that now ... Well, actually  
191 some changes in my life that I'm making right now. I put the Xbox away  
192 'cause it was taking too much of my time. And I put Reddit away. I'm  
193 not getting on Reddit- Reddit, the website if you're familiar. Or Xbox.

194

195 I: A little bit.

196

197 S: Um, they were just eating up too much of my time, so I put them on  
198 the shelf for one month at least. Not touching them at all. And I know  
199 that for that specific class it's gonna be back to the Calc 1 go to office  
200 hours every week, make sure I understand the material, get the  
201 homework done. I know I'm gonna have to put in more work to take ...  
202 to salvage that class, 'cause I know I didn't do well on that exam. If it's a  
203 class where I know I'll be able to squeak by on my own usually I'll do  
204 the math like, "Okay, I did ... I got this grade on this test. What do I need  
205 on the next test and the final and all the homeworks and the lab? What is  
206 the bare minimum I can do without failing this class?" That's  
207 occasionally my mindset if it's a class that I just wasn't applying myself  
208 well enough. Controls is a difficult class for me. So I- so the office hours  
209 will be ... is part of my strategy to recover. Does that make sense?

210

211 I: Yeah. So what if you get ... the teacher sometimes they'll put up not  
212 names, but just the scores that people got so you can see the distribution.  
213 What if you see that you were really far on the low end of that  
214 distribution?

215

216 S: Um, usually it's not a shock when I- I know I did poorly on a test, so  
217 I'll just, you know, "Okay, that's what I expected." It doesn't affect the

218 strategy that I will have already formed. I know when I do poorly on an  
219 exam. I don't think I've ever been blind-sided by doing really poorly.  
220 And I guess I would just come to expect being about average on exams  
221 and then when I expect a low end, then...

222

223 I: All right. So what if somebody else that you don't think of as being as  
224 smart as you are did better than you on that exam?

225

226 S: Actually, that occurs pretty frequently.

227

228 I: Okay. Would you share that with anyone else?

229

230 S: Um, no. That's kinda the same thing.

231

232 I: All right. How 'bout would you share that you didn't do well with  
233 anyone else?

234

235 S: Um, yeah. I'll usually tell people if I did particularly poorly,  
236 especially if it's, again, my family and they knew that I was taking the  
237 test, and I'll say, "Yeah, didn't go well." Um, I probably don't talk about  
238 it as much as if I did well, but I'm not particularly ashamed of doing  
239 poorly.

240

241 I: Do you tell those two friends again?

242

243 S: Um, if they ask about it. I probably won't go out of my way. One of  
244 those friends is my roommate, so he'll probably find ... I'll probably say,  
245 "Oh, man, just bombed a test today," or something like that. So he'll  
246 probably know, but the other one, nah, I won't tell him.

247

248 I: Okay. Why not?

249  
250 S: I don't like to complain. I feel like doing poorly on a test is a  
251 complaint. Try to keep that to a minimum.  
252  
253 I: Okay. Why don't you like to complain?  
254  
255 S: It's not productive. Makes other people's day worse. There's no  
256 positive.  
257  
258 I: Okay. Does it matter to you if your peers think you're smart?  
259  
260 S: I would like them to. Um, does it matter to me if they think I'm smart  
261 ... I would say yes, it does.  
262  
263 I: Why?  
264  
265 S: Um, on a practical level, um, I think people will trust me with more  
266 responsibilities if they think I'm smart. Or even just, you know, trust my  
267 ability to do tasks that- that perhaps an employer would need me to do or  
268 a group project member would need me to do to know that I'm  
269 competent and can handle what they need me to get done. Um, and  
270 friends, I want them to- to know that I can have a legitimate discussion. I  
271 don't want them to think I'm dumb as a rock, 'cause that hampers any  
272 relationship.  
273  
274 I: Okay. So do- does it matter to you if your professors think you're  
275 smart?  
276  
277 S: No.  
278  
279 I: Why not?

280

281 S: 'Cause they grade me the same whether I'm dumb or smart. All I have  
282 to do is show it on paper that I'm smart. If they- if they see that I got a  
283 90 on the test and then they think that I'm dumb, well, I don't really care.  
284 I got a 90. It's- it's objective.

285

286 I: Okay. So tell me about what motivates you to pursue an engineering  
287 degree?

288

289 S: I enjoy engineering. I had an internship after my freshman year with  
290 [company], and I just like was on ... what's part of the job. I like, uh,  
291 solving problems. You know, I like the profession. It's nice and  
292 straightforward. It's not like English where you're being graded on, to an  
293 extent, an opinion. Like it's numbers and facts with engineering. I like  
294 that. Um, and the ... I mean obviously the- the starting salaries are nice,  
295 so I can live the life that I want, um, with that kind of money. I can  
296 actually live (laughs) way better than I- than I want with that kind of  
297 money. Um, my dad motivates to an extent, motivates me. 'Cause he  
298 tried to ... he started out as a mechanical engineer in college, um, but  
299 ended up, uh, switching degrees to an engineering technology tech  
300 degree because he couldn't pass differential equations I think. Um, so he  
301 just switched so he didn't have to take it. And so he's really supportive of  
302 me continuing on with the degree. So that helps. Obviously I'll be the  
303 first person in my family to get, you know, like an actual mechanic ...  
304 like an actual engineering degree. Um, so- so that's motivating. And I  
305 guess, to a certain extent, now it's just because I'm stubborn. I'm so far  
306 along that I'm not switching even if I feel like there might be a better fit.  
307 I'm getting this degree. If I need to go get another degree or a minor I'll  
308 think (laughs) about that after I'm done. Um, 'cause I'm stubborn. Good  
309 enough?

310

311 I: Sure. Why do you find those motivating to you?  
312

313 S: I just feel like I'd let my dad down if I quit now. Um, well, I mean I- I  
314 know for certain that he'd be let down. Not only for the, I don't know,  
315 the- the proud-of-you aspect, the I'm his son and he wants me to do well.  
316 He's also paying a lot of money for college. My grandparents pay about  
317 half of my tuition. My parents pay about a quarter. And I pay a quarter.  
318 So by doing poorly, I let all of those people down. Um, so that's- that's a  
319 motivation that I keep in the back of my head. I don't do very well at not  
320 letting them down, but haven't been kicked out yet. Um, and as far as the  
321 other stuff, I feel like they ... like the- the salary and the profession, I  
322 feel like those speak for themselves as far as motivation goes.  
323 Everybody wants a decent life and a job that they like.  
324

325 I: We all gotta eat.  
326

327 S: Yeah.  
328

329 I: Okay. So if you were to make a pie chart of your motivations as a  
330 student to crack down and work and such, what percent would you say  
331 you're motivated by your grades versus by your desire to learn?  
332

333 S: Um, only those two categories?  
334

335 I: Well, if you have something else you want to throw in...  
336

337 S: Okay. I'll just keep it simple and leave it with the two. Grades and  
338 desire to learn. Typically, I would put it at a ratio of average seven parts  
339 to three, um, grades to- to actual learning. I care a lot more about the  
340 grades because of our- our goal, our GPA-driven system. And I don't  
341 feel like a lot of the classes that we take apply to me that much. And I

342 understand that I very well may be mistaken about that, but a lot of it  
343 seems like we're just doing work to do work. We're kind of here to learn  
344 how to learn so to speak. Um, and so ... or- or maybe ... I mean it's good  
345 to- to go through the subjects to get a- a base knowledge of anything that  
346 we might experience in- in our profession, but the specifics we're nev ...  
347 I'm never gonna remember the specifics of a subject that I- that I learned  
348 last semester even. So for me it's get the grade and get out to a large  
349 extent. So 70% to 30% I would say.

350

351 I: So is that the same for all of your classes?

352

353 S: No, there are some classes that I just enjoy. Like I enjoy Thermo 1. I  
354 enjoy Fluid Mechanics to an extent. Um, so yeah, there's more subjects  
355 that I enjoy learning more, and then I ... you know, I like to actually  
356 learn those things and the grade just comes with it.

357

358 I: Okay. Okay. In what ways are your grades important to you?

359

360 S: Um, my grades are largely only important to me because of  
361 employment prospects based off of GPA. For internships it's huge. It's  
362 3.0 or nothing. You know, if it's not above 3.0 they won't- won't hire you  
363 as an intern. I don't know what ... to what extent that affects actual  
364 employment, but I know that some employers do still require the 3.0,  
365 um, upon graduation at a full-time job. So- so for the most part my  
366 grades are thought of in terms of employment and how they affect my  
367 employability. Um, yeah. As far as for like bragging rights, I don't really  
368 care, especially since my GPA is nowhere near somewhere I could brag  
369 about, so it's not really on the table.

370

371 I: All right. In what ways is learning the material important to you?

372

373 S: Only in so far as I use it in the field. If I'm never gonna use it again I  
374 don't really care.

375

376 I: Okay. So let's say you are, uh, enrolling for a course that is needed for  
377 your, uh, curriculum and you have two lecture options and both of them  
378 work with your schedule, but they're taught by two different professors.  
379 So you know both of these profe- professors by reputation. One of them,  
380 their class tends to be really hard to pass, but it's a class that everyone  
381 feels like they came out having learned a lot. The other, everyone gets  
382 pretty good grades without too much trouble, but they don't feel like  
383 they've learned as much. Which one would you enroll in?

384

385 S: Undoubtedly the second option.

386

387 I: The easier one?

388

389 S: Yeah. I'm perhaps not proud of that, but yeah. There's no doubt in my  
390 mind.

391

392 I: Why?

393

394 S: Because I guess the, uh ... because I care about, uh, the- the- the  
395 grades more than the learning. I would rather just get out and, you know,  
396 get the grade, get out, without trouble, rather than saying, "Oh yeah, I  
397 learned a lot." So that is an embodiment of my previous answer of the  
398 70% to 30%.

399

400 I: Okay. So is there a situation in which your answer might change?

401

402 S: I do not think so.

403

404 I: All right. Not even if it was something that you were really, really  
405 interested in?

406

407 S: I don't think so. I don't think there's anything that interests me that  
408 much to be willing to risk failing a class or ...

409

410 I: Okay. So tell me about your strategies as you learn and study.

411

412 S: Ideal strategies, or strategies that have been implemented?

413

414 I: Tell me both.

415

416 S: Implemented, no strategies.

417

418 I: (laughs)

419

420 S: Ideal, um, doing homework as it's assigned, getting it done before the

421 weekend if it's due the next week or like on Monday. Um, get it done

422 before the weekend. Basically, do homework in a timely manner. Go to

423 office hours, um, for the questions that you do not understand on the

424 homework. If you need clarification, go get it. And then, three, set aside

425 ample time to study before the test. I think those three things are pretty

426 well set. Doing homework in a timely manner. Make sure that you

427 actually do the homework and have time to ask questions about it.

428 Asking questions about it will probably help your understanding

429 tremendously, in my experience. Um, and then and like being a frequent

430 visitor to office hours, you'll just absorb knowledge that perhaps you

431 didn't go there initially to explain, but, um, I mean the professor just ...

432 you know, he wants you to learn and he wants you to understand what

433 he's trying to teach you. And that stuff will probably be on the test. Even

434 if it wasn't immediately clear initially that you needed to know that



435 you'll come out knowing it. So going to office hours helps you get the  
436 questions that you knew you had answered, and also answers questions  
437 that you didn't know you had. That was probably more than you wanted  
438 to hear.

439

440 I: Of course not. I want to hear everything.

441

442 S: All right. Of course. (laughs)

443

444 I: (laughs)

445

446 S: Yeah. Three-step strategy.

447

448 I: All right. Are you telling me you employ none of those? (laughs)

449

450 S: Um, virtually none. I procrastinate a lot, so that kind of, um,  
451 eliminates all of them, all of those steps. Procrastination is the enemy of  
452 good study habits. You don't have time to finish the homework, which  
453 means you don't have time to ask questions, which means when the test  
454 comes ... Well, when you procrastinate, you don't set aside ample time,  
455 so yeah.

456

457 I: Why do you feel that you procrastinate?

458

459 S: I ... I think I fear ... Okay. I'm gonna get a little bit deep here. I fear  
460 failure more than anything. And when I ... Well, when I sit down to do  
461 homework I'm probably not gonna understand something, which feels  
462 like a failure. And so if I procrastinate I put off that feeling of failure as  
463 long as possible.

464

465 I: Okay. How do you think you came to realize that was why you

466 procrastinate?

467

468 S: Um, I guess just- just an examination of self. Determining that fear is  
469 ... or failure is my greatest fear, just because I can't think of anything  
470 else that's- that's worse. And then- and then I mean fre- and frequently  
471 sitting down to homework it becomes evident like this feels like failure,  
472 because I sit down to do the homework and, "Yep, I don't know how to  
473 do this." It sucks.

474

475 I: What is it about failure that you fear so much?

476

477 S: Um, I'd say letting other people down. Being a failure, people don't  
478 rely on you. And, uh, so yeah, there's definitely letting people down.  
479 There's letting myself down. And there's not ... there's failure of not  
480 setting up a life for myself after college in which I can help other people.  
481 If I fail in college, I get kicked out of school or have a GPA so low that I  
482 can't get a job that I was meant to get, then I'll be in a less ideal situation  
483 to help other people. I'll be focused on helping myself, like salvaging a  
484 life for myself instead of being able to, I don't know, give back. You  
485 know? Does that make sense?

486

487 I: Mm-hmm (affirmative). This helping other people thing, tell me about  
488 that.

489

490 S: Well, that's ... I believe helping other people is what we're here for.  
491 Gonna get a little ... I don't know. Can't really talk about this without  
492 being religious and/or philosophical. Um ...

493

494 I: So? Tell me anyway.

495

496 S: So yeah. I'm [Christian denomination], so, um, Jesus said whatever

497 you do for the least of these you do unto me. So helping the people that  
498 were less fortunate ... helping people that are less fortunate than  
499 ourselves is something that he explicitly told us to do, um, so we gotta  
500 do it. Um, not only does it help them, but I mean it ... the feeling that  
501 you get when you help other people is a good feeling. It's- it's positively  
502 reinforcing our brains to help other people, I feel, which ... and so it's  
503 just kinda the natural order of things, to help people less fortunate than  
504 ourselves. Um ... I lost my train of thought.

505

506 I: You're telling me about why motivating ... why it's motivating to- to  
507 help people. And you mentioned Jesus and you mentioned, uh, basically  
508 endorphins. (laughs)

509

510 S: Yeah. Uh, yeah, two things that don't usually go in the same sentence.  
511 (laughing)

512

513 I: I get that a lot. (laughs)

514

515 S: I can't really think of anything else.

516

517 I: All right. How 'bout telling me in what ways are you ... what ways do  
518 you see yourself doing your best to help people in the future, assuming  
519 everything in school works out?

520

521 S: So, okay, back on track. Um, my main goal is ... my main, um,  
522 avenues to helping other people is just to be somebody who is support ...  
523 like in the workplace ... so we're in the workplace. I have coworkers  
524 everywhere. If you can be positive and just, you know, cheerful and nice  
525 to be around, um, that'll make the other people around you feel good, so  
526 that's helping them in a way. Um, and then developing friendships with  
527 those people, developing relationships so that they can actually ... I

528 mean like so that they can confide in you or I mean so you can help  
529 them with their problems. I mean everybody has struggles that they're  
530 going through. So like in the workplace, being positive, building  
531 friendships, you can help them with those struggles. That's the other way  
532 to help people. Additionally, um, that starting salary that I was talking  
533 about earlier, um, it wouldn't just go for me. It would go- it would go  
534 towards charitable organizations. It would go towards, um, freeing my  
535 mind from the stress of how am I gonna eat? You know? With enough  
536 money you can- you can kinda compartmentalize like, "Okay, I don't  
537 have to worry about supporting myself. That's taken care of. I can spend  
538 time and energy with other people, uh, with helping other people." Uh,  
539 with organizations like Habitat for Humanity, which is pretty cool. Have  
540 you heard of it?

541

542 I: (sneezes)

543

544 S: Bless you. That's just a- that's a time and energy type thing. Um, food  
545 pantries, those are typically, um, time and energy intensive and don't  
546 have enough help. Um-

547

548 I: Harvesters?

549

550 S: Harvesters? Is that a specific food pantry?

551

552 I: Uh, kind of. Yeah.

553

554 S: I'm not familiar with it.

555

556 I: Uh, it's in the ... at least the one I've been to I think was in the KC  
557 area, and, uh, my church would sometimes go there to volunteer with  
558 sorting food. Um, in particular I remember us going through ... They

559 received huge case loads of eggs. Uh, if even one egg was known to be  
560 damaged, the whole case was sent over. So we would wash and, uh,  
561 examine the eggs and make sure they were un-cracked.

562

563 S: Yeah. That sounds like a good use of time and energy. Something like  
564 that. The list goes on.

565

566 I: Sure.

567

568 S: But you get the idea.

569

570 I: All right. So how ... I know you don't really use your strategies as  
571 much as you probably should, but how do you think you came up with  
572 them?

573

574 S: Um, I can say that I successfully implemented them with Calculus 1.  
575 I'd say that's probably the only time. But I ended up with a B in the  
576 class. It was a huge struggle. So but I consider that some positive  
577 reinforcement there. And I think to an extent they're pretty generic  
578 strategies that I- that I assume I've seen other people talk about. I can't  
579 think of specifics, but ...

580

581 I: All right. So do you feel that your studying has changed over time at  
582 all?

583

584 S: Yeah, I study less now than- than I did before. But hopefully that's  
585 about to change.

586

587 I: Do you, uh, study more or less than you did when you were in high  
588 school?

589

590 S: I study more than I did in high school, because if I studied as much as  
591 I did in high school I would've been kicked out of college by now.

592

593 I: Okay. How did you feel about coming to college and realizing you  
594 needed to study more?

595

596 S: Um, it kinda sucked. It made me feel a little bit ... betrayed is a strong  
597 word, but let's say betrayed by my high school, um, not preparing me e-  
598 enough for an engineering degree. This might sound ... This is arrogant,  
599 but I feel engineering is more difficult than most other majors, the  
600 exceptions being biology, chemistry, and pre-med. That stuff is crazy.

601 Um ...

602

603 I: I think I've heard pre-med is basically a death wish.

604

605 S: I have a friend who just entered med school. Yeah, she doesn't have a  
606 life, um, but she's a very hard worker. So I feel like high school prepares  
607 you well for something like a business degree. Something like that. But  
608 those other really intensive majors like the ones we just mentioned,  
609 didn't really feel like we're preparing you that much for them. Yeah. Just  
610 kinda sucks in that regard.

611

612 I: In what ways did you feel under-prepared?

613

614 S: I got out of high school not having taken Calc 1, and that's a huge  
615 setback. I took college algebra my senior year, and because I didn't ...  
616 and when I enrolled senior year I didn't really know that I wanted to go  
617 into engineering. I did not know what kind of classes engineering  
618 entailed at that point. And nobody said anything as I enrolled in- in  
619 college algebra, which was- which was far below what I should've been  
620 taking. The option to take Calc 1 and even Calc 2 was there at my high

621 school, but it wasn't laid out that you probably should take those if you  
622 want to be an engineer. Stuff like that. Um ...

623

624 I: So not just having the options, but making it clear that they would be  
625 useful for different fields, perhaps?

626

627 S: Yeah. I'd say, yeah, better awareness is- is needed in high school as to  
628 what the expectations of college are. We had a physics class too that I  
629 didn't take 'cause I thought, "Oh, that's hard and I don't need it." It was  
630 optional. But ... And actually I mean my math classes pretty much went  
631 downhill. It- so it's kinda a snowball effect after sixth grade even. Yeah,  
632 sixth, seventh, eighth ... seventh, eighth grade, my math education was  
633 virtually non-existent. I took ... (laughs) Okay. This is getting like way  
634 detailed.

635

636 I: That's fine.

637

638 S: But so my eighth grade year there was the option to bus over to the  
639 high school to take, uh, what ... Algebra 1 or something like that. And I  
640 took that placement exam and failed it. Um, I was not able to take  
641 Algebra 1 as an eighth grader, um, which set me back a year. If you- if  
642 you did that then it put you on track to hitting Calc 2 by the end of your  
643 senior year. But at that point I had neither the mot- motivation or the  
644 knowledge that I wanted to do that, um, that it would be beneficial to  
645 me. So when I failed the test I was like, "Whatever. I don't have to take a  
646 harder math class." Um, and then just that- that lack of foundation in  
647 mathematics, I overcame it obviously. I passed differential equations  
648 with much difficulty. Um, but it could've been so much better. And  
649 having ... So let's say I- I passed that test in eighth grade. I take algebra  
650 one and then progress through and have Calc 2, or maybe even just Calc  
651 1, at the end of high school I have so much more time freshman and

652 sophomore year to- to devote to other classes and actually learning that  
653 material, ideally, um, and building a base of the GPA that's respectable.  
654 Instead of spending all of my time studying for Calc 1 and going to  
655 office hours and putting all my time in that class, it would have gone to  
656 other classes. Same with Calc 2, Calc 3, diff eq.

657

658 I: Yeah. I can kind of see that. I- I was in a totally different walk than  
659 you were, but I have seen a lot of people not react well to mathematics.  
660 (laughs) They- they just kind of recoil as though I asked them to scratch  
661 their fingers down a chalkboard. (laughs) Uh, and I could see that a lot  
662 because I did my undergraduate in mathematics. (laughs)

663

664 S: Yeah.

665

666 I: Also one of those harder fields, but ...

667

668 S: Yeah, for sure.

669

670 I: Um, so how much effort do you feel that you put into your classes as a  
671 general rule?

672

673 S: That's a very relative question. How much effort? Um ... I'd say I  
674 probably put in less effort on average than my classmates. Seems like.  
675 Something that kind of influences that opinion is I usually go through  
676 classes solo. A lot of my classes have extensive study groups, um, and it  
677 seems like they're always ... they're always up late doing homework and  
678 stuff like that. Um, but I don't have a good idea of what they're actually  
679 doing. I don't know if they're productive. But, um, it does seem like the  
680 majority of my classmates spend- spend more time working than I do.

681

682 I: So you- you mentioned observing that your classmates are studying all



683 the time being why you feel that you, uh, put lower effort in, but why do  
684 you think that you do put lower effort in?

685

686 S: Um, I guess I ... Lately I've had higher priorities. So part of it is not ...  
687 part of it is enjoying other things more than homework, and then the  
688 other part is, um, that sense of fear and failure that is associated with  
689 homework for me, and studying. Um, so yeah, it just gets shoved as far  
690 back as- as I can.

691

692 I: What kind of things do you enjoy more than homework that kind of  
693 eat your time?

694

695 S: So Xbox- Xbox and Reddit I mentioned were ...

696

697 I: Mm-hmm (affirmative).

698

699 S: ... eating up a lot of my time. But along with those go friends. Um,  
700 those two best friends that I mentioned are both really into that, a  
701 specific game on Xbox. They, however, know how to manage their time  
702 and they can do it responsibility.

703

704 I: (laughs)

705

706 S: So that's part of it. And then making myself available for other  
707 friends, friends that don't play Xbox... I've got two, three other friends  
708 that I would pretty much just drop anything to do, um, something with  
709 them. Just 'cause I view relationships as the most important part of my  
710 life.

711

712 I: They are important. If you don't keep your emotional health ... self  
713 healthy, how can you keep anything else healthy? Well, if you don't try

714 anyway. (laughs) So do you feel like you learn more from classes that  
715 you put more effort into?

716

717 S: Yes.

718

719 I: Why do you think that is?

720

721 S: Uh, just spending more time with material makes it more likely that  
722 you'll remember it, more likely that you will actually learn something.

723

724 I: How 'bout compared to your peers, how do you feel that your  
725 relationship with learning and effort in a class goes?

726

727 S: Um, like my classmates have a higher priority, um, with both learning  
728 and working. Um, they seem more driven towards the end goal than I  
729 am.

730

731 I: All right. So think of a subject or a class or something that you had to  
732 put in a lot of effort to succeed, and tell me about it.

733

734 S: Calc 1.

735

736 I: All right.

737

738 S: Mentioned two or three times already.

739

740 I: So just tell me about it.

741

742 S: I spent many hours doing homework that was very difficult and I  
743 thought it was pointless. Very pointless. Looking back Calc 1 is not  
744 difficult. But at the time it was very difficult. So spending a lot of time

745 doing homework and then going to office hours and asking questions  
746 about every question on the homework. And then going to office hours  
747 to study for the test, the pre-test. I had it with [professor] who's  
748 awesome, and his practice tests were pretty similar to the actual test. So  
749 it was just a lot of time and a lot of effort and a lot of stress.

750

751 I: How did you feel about that class and the effort and stress that came  
752 with it?

753

754 S: Um, just, uh, it was a pretty annoying class 'cause I didn't feel like it  
755 was that helpful to me. Calc 1 is helpful to us though. I was wrong. Um,  
756 so I'd say ... I mean now I look on it with kind of a positive outlook  
757 because I consider myself successful with that B. Um, but at the time it  
758 was very, very negative.

759

760 I: What did you get out of that experience?

761

762 S: Um ... well, I guess it kind of exemplified the value of actually  
763 applying yourself, which isn't something that I've really taken to heart,  
764 but it does kind of exemplify that value.

765

766 I: All right. Now think about a class or subject that you were able to  
767 succeed without putting a whole lot of effort in at all, and tell me about  
768 that.

769

770 S: Um, let's see. For whatever reason, Thermo 1 didn't seem like it took  
771 that much effort for me. I got an A in the class. Even though I know I  
772 spent a lot of time doing homework with the study group. That was like  
773 the one class that I had a study group for. Um, it did not feel like I put in  
774 that much effort, but I got an A nonetheless. I was still spending a lot of  
775 time doing homework. Stop by Professor [professor], and he assigns

776 homework- homework, um, every class period. I think it was a Tuesday,  
777 Thursday class.

778

779 I: I really liked [professor].

780

781 S: He was good. Um, but forcing me to do homework every class was ...  
782 It kinda, you know, um, kinda babied you, um, spoon-fed you, but  
783 forced you to do it.

784

785 I: Sure.

786

787 S: Um, so I ... in that regard he was easier on us and it felt like less  
788 effort, but it was probably similar amounts of time involved.

789

790 I: How did you feel about that class and the low amount of effort it felt  
791 like it took?

792

793 S: For me I just ... It- it seemed like the subject material clicked. Well, it  
794 was like one of the only subjects that just clicked for me. Which I  
795 question now because Thermo 2 was really, really boring and I took a C,  
796 and I just didn't care about Thermo 2 by the end of it. Um, so I don't  
797 know. But at the time it felt like, "Finally a subject I'm actually good at."  
798 Um, made me feel good. Didn't think too much about it...

799

800 I: Would you describe it as relief maybe?

801

802 S: No.

803

804 I: Okay.

805

806 S: Not really.

807  
808 I: Just good.  
809  
810 S: Yeah. Proud I guess. Proud that I had finally found ... At the time it  
811 was like, "Oh, I can be a thermo guy." But I don't know.  
812  
813 I: Okay. And what did you get out of that experience?  
814  
815 S: I wouldn't really say I got much out of it. It was kind of a ... it was an  
816 easy success, and easy successes don't teach as much I feel.  
817  
818 I: Okay. So think about people you know, and think of a student that ...  
819 you know, who puts in a lot of effort to secede- succeed. And they do  
820 succeed; they just have to work their butts off to do it.  
821  
822 S: Uh-huh.  
823  
824 I: What does that tell you about how smart that person is?  
825  
826 S: Um, I guess it's kind of a complicated question 'cause smart is a  
827 relative term. So these people that work hard and succeed, they have the  
828 mental capacity to succeed obviously, so they're smart, but they didn't  
829 start out that way, so are they actually smart? Um, to me they're very  
830 intelligent people. They know that they need to work towards  
831 something, and that self-awareness is ... I would say that's intelligence.  
832 So I'd say they're very smart people, but I couldn't ... I don't feel like I  
833 can articulate very well why I think that. Maybe I did. I don't know.  
834  
835 I: And for comparison, think about someone you know who doesn't have  
836 to put in a lot of effort to succeed. They succeed, but it feels like they  
837 just kinda skate by. What does it tell you about how smart they are?

838

839 S: One of my roommates was that way. Um, I'm not really sure.

840 Obviously he was very intelligent to, just in a kind of- kind of a different

841 way. I don't really understand why some people are naturally smarter

842 than others. That's just how it is.

843

844 I: Would you tend to think of one of those people as smarter than the

845 other, or just differently smart?

846

847 S: I'd say it's different. I think both of them will be equally successful in

848 the field. The person who's more naturally intelligent, it'll probably

849 remain easier for them, so I'd say that is a more ideal circumstance that it

850 just comes naturally to 'em. Um, the end result is the same, but ... so like

851 the person who's more naturally intelligent will just have more free time

852 and more time to think about things other than the task at hand, which I

853 would view as a positive. Um ... What was the original question? Are

854 they smarter?

855

856 I: Do you think that one would be smarter than the other, or do you think

857 that they're equally smart, just different smart?

858

859 S: So I would still call them equally smart. It's just a matter of how

860 much time it takes them to solve a problem.

861

862 I: Okay. Now tell me about some time in your life when you received

863 some kind of feedback that you were not performing to expectation.

864

865 S: Um, let's see. One time my employer told me that I lacked, um, self-

866 initiative. What's it called? Self ... He said ... His exact words were,

867 "You kind of need to be led to water." Um, his- his point being you need

868 to look for things to be doing by yourself instead of just asking for a

869 next task. Um, that didn't feel good, but I've tried to take it to heart. I've  
870 tried to ... especially when it comes to employment. When it comes to  
871 school I don't care. Um, but I have taken that advice to heart in other-  
872 other areas of my life besides academics.

873

874 I: So tell me about your response in other areas other than academics?

875

876 S: Um, in the workplace I mean I- I do have to consciously think about  
877 what can I be doing next instead of ... So I finish the task at hand. It's  
878 time to sit around or if I finish the task at hand, what can I do now?  
879 What else needs to be done that wouldn't normally be part of my job  
880 description, wouldn't be a normal task for me? Um, and even in my as  
881 far as like scheduling my life goes, like okay, what is the next priority?  
882 What needs to get done? What can I be doing at this point? That's what I  
883 got from that particular piece of advice.

884

885 I: Okay. What was the outcome of that response?

886

887 S: Um, so I do feel like I've improved in that area. The job that I work  
888 currently is a menial labor position at a sorority. I wash dishes and bus  
889 dishes and do a little bit of food prep and keep the klitchen- the kitchen  
890 clean, and I do a pretty good job of implementing that advice. However,  
891 I don't think my employer actually recognizes that. I feel  
892 underappreciated. I think that's kind of a shortcoming on her part. Not  
893 really sure. Um, so I wouldn't say I've had concrete results from that  
894 piece of advice and its implementation, but I feel like I've improved.

895

896 I: Okay. Does it feel good to feel that you've improved?

897

898 S: Yeah.

899

900 I: Okay. Did you learn anything from that experience?

901

902 S: Yeah. I learned how other people view me, and I learned a little bit  
903 about myself. I mean I- I know that, to an extent, I lack self-motivation  
904 and initiative. And- and having somebody verbalize it just made it that  
905 much more clear to me.

906

907 I: Okay. What advice would you give to someone who's struggling with  
908 a similar problem?

909

910 S: Um, I guess basically what ... I mean if they're struggling with it and-  
911 and it's clear then I can basically say the same thing that was said to me  
912 in a nicer way. Um, but yeah, just- just let them know that, "Okay, that's  
913 just part of who you are. You need to be aware of how you can correct  
914 it." Be- be ware of the problem and this is how you can correct it. So  
915 you need to think about, um, what- what you can be doing. You need to  
916 prioritize and think about what is the next thing that needs to be done,  
917 for that specific example.

918

919 I: Okay. Do you care if your pe- if your peers judge you when you do  
920 poorly?

921

922 S: Um, no. I'd say not. I mean if I do poorly, I did poorly.

923

924 I: Okay. Why don't you care if they judge you?

925

926 S: Doesn't mean much in the end. I mean depending on their level of  
927 judgment I guess. If they ... if my best friend decides to cut of our  
928 friendship because I did poorly on a test I'll care at that point. But I  
929 mean it doesn't really matter. It doesn't affect my life, what they think.

930



931 I: Okay. How 'bout your professors? Do you care if they judge you when  
932 you do poorly?

933

934 S: Maybe to a small degree more, because they're the ones who are  
935 supposed to be teaching me. But at the same time, typically it's not their  
936 fault when I do poorly. It's typically my fault. So, again, not really.

937

938 I: Okay. So why don't you care?

939

940 S: Um, if I did poorly, typically, I deserve it. It's 'cause you didn't  
941 prepare well enough. You suck. (laughs) Like I did- I did poorly. It's my  
942 fault. People ...

943

944 I: Okay.

945

946 S: People will form their opinions and that's what people do.

947

948 I: Mm-hmm (affirmative). Do you generally just feel like their judgment  
949 of you will come back and bite you in the future?

950

951 S: Um, even if it does, like if they decide to grade me more harshly  
952 because they think I'm a poor student, that's still my fault. I could've  
953 corrected that. It's my fault.

954

955 I: So it really just boils down to it being your fault.

956

957 S: Yeah.

958

959 I: Okay. Do you feel like you learn more from an experience that's  
960 challenging or not challenging?

961

962 S: You learn more from something that is challenging, definitely.

963

964 I: Okay. Does it matter to you if you succeed during that challenging  
965 experience?

966

967 S: It matters to me, but I feel like you learn the same amount whether  
968 you fail or succeed. The prob ... or the- the crux of the issue is making  
969 sure that you learn something when you fail. It's not about it just being a  
970 failure. You need to actually sit down and think, "Okay, this is what I  
971 could've done to make this a success," or "These are the things that I did  
972 well. It just didn't work out in the end."

973

974 I: Okay. So you would say that a challeng- a challenging experience has  
975 more potential to ...

976

977 S: Yeah.

978

979 I: ... give you knowledge, but, um, you have to make sure that you can  
980 learn from a failure, and that's on you?

981

982 S: Yeah. I think that's it.

983

984 I: Okay. So now that we've talked through all these different ideas  
985 related to motivation, effort, and challenges, how would you summarize  
986 what you've shared with me?

987

988 S: In summary, I have a good understanding of what it would take to  
989 succeed. However, there is a disconnect between my motivations in life  
990 and my motivations in school. That's the first part. See ... Um, however,  
991 there is a correlation in my prioritization of classwork and my outlook  
992 on life. I'd have to write this down if I wanted it to make sense. But ...

993  
994 I: (laughs) Well, you can write it down if you really want to.  
995  
996 S: I don't really feel like it. (laughing) It would still take me 15 minutes I  
997 feel to- to concisely summarize this interview. I always have ... I have to  
998 graphically organize things. I'm not good at organizing things in my  
999 head. Um ...  
1000  
1001 I: Are you saying you need a Jarvis? (laughs)  
1002  
1003 S: That would be ... Actually, I don't know if that'd be helpful.  
1004  
1005 I: Well, it might be helpful to have the screen that you could just poke  
1006 things into place. (laughs)  
1007  
1008 S: That's true. Usually a pencil and paper is good enough though. Um, in  
1009 summary we talked about motivation, challenges, and ...  
1010  
1011 I: Effort.  
1012  
1013 S: Effort. Do you want to summarize the topic in general, or specifically  
1014 in regards to myself?  
1015  
1016 I: Whatever you want.  
1017  
1018 S: How important is this question to the interview?  
1019  
1020 I: Um, it's fairly important I guess. It just kind of tells me what you feel  
1021 like we've been talking about.  
1022  
1023 S: Okay. So for me the things that I've noticed in this interview, like the

1024 big thing is I talked a lot about my mov- motivations. However, I am  
1025 still not that motivated to actually do classwork. So that's kind of a weird  
1026 disconnect there, um, for myself. Um, another thing I feel like as far as  
1027 the challenges go, I feel like it's been pretty cut and dry. I feel you learn  
1028 more form challenging experiences. And then I also mentioned that I do  
1029 not, um, prioritize learning in classes, and that corresponds to me not  
1030 taking on bigger challenges in my classwork. So those kinda correlate.  
1031 Um, and then effort. I don't feel like I put forth that much effort,  
1032 typically. So that's kind of the- the glue there.

1033

1034 I: The glue?

1035

1036 S: Between ... Yeah.

1037

1038 I: (laughs)

1039

1040 S: Between the motivation and challenges. Both require effort. Since I  
1041 lack effort, I'm not super motivated to take on challenges. It's kinda ...

1042

1043 I: Oh, okay.

1044

1045 S: That's what I mean.

1046

1047 I: Did you gain any insights from our discussion?

1048

1049 S: I will have to think back on it and digest what we've talked about if I  
1050 wanted to actually glean some information.

1051

1052 I: Okay.

1053

1054 S: But you probably want me to say at least one thing that I feel like I've

1055 learned.

1056

1057 I: It would be nice.

1058

1059 S: (laughs) Um ...

1060

1061 I: I mean if you didn't learn anything then that's that, but if you did learn  
1062 something it would be nice to know about it.

1063

1064 S: Yeah. Um, so that disconnect between my motivations that I listed  
1065 and my actual motivation is somewhat disconcerting to me. Um, I'd say  
1066 that's the main thing that's on my mind right now.

1067

1068 I: Okay. Thank you very much.

1     **Interview Transcript 8: Hayleigh**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/16/2018

4     Transcribed by: Rev.com

5

6     Interviewer: Our goal today is for us to have a detailed discussion about  
7     your beliefs about or your perceptions of the nature of your intelligence.

8     The discussion will inform my understanding of the perceptions of  
9     engineering students and will help future decisions about the

10    undergraduate engineering experience and how it can be improved for

11    all students. I want to hear your own thoughts and perceptions. I'm

12    expecting they'll not be the same as anybody else's. There's no right or

13    wrong answer, I just want to know what you think. I aim to understand

14    your perspectives so I will ask questions like, what do you mean by that,

15    and can you elaborate? Uh, these types of questions can end up being a

16    little bit awkward and may require you to reflect on your experiences, so

17    I'll purposely just give you a long time to think about it. Take your time,

18    if you need clarification, let me know.

19

20    Student: Cool.

21

22    I: Any questions?

23

24    S: Nope.

25

26    I: All right, tell me about yourself as a student.

27

28    S: Okay, as a student, um, well I guess all through high school I was

29    kind of, um, grades and learning and that kind of stuff was really

30    important to me, so I'm kind of carrying that on here. Uh, you mean,

31    like, habits, um?

32

33 I: Sure, habits, descriptions, etc.

34

35 S: Okay, well, um, I ... in high school I wasn't very good at studying  
36 because it kind of just everything came naturally, and so right now I'm  
37 in the process of learning how to study (laughs) which is pretty  
38 interesting since I've never had to do it. So-

39

40 I: Yeah, it's a pretty common phenomenon.

41

42 S: Yeah. Yeah, so that's definitely where I am now, and then balancing,  
43 like, clubs and organizations with all the ... but like, still having a bunch  
44 of free time is really weird. Um, yeah, so I'm kind of getting used to that,  
45 um. I tend to sit, like, in the front rows just to stay focused and paying  
46 attention, because I came from a small school so I know if I sat in the  
47 back I'd probably wander off and whatnot, so yeah.

48

49 I: Okay. What does it mean to you to be a good student?

50

51 S: Um, definitely studious, um, but also, like, paying attention and  
52 having a relationship with your professor. I think that's really important,  
53 and just understanding that, like, they're a person too, not just somebody  
54 standing up there and talking, you know? Um, definitely good study  
55 habits, which I'm working on, but also being able to help your peers out.  
56 I think that's a big thing.

57

58 I: Do you consider yourself a good student?

59

60 S: Yes.

61

62 I: And-

63

64 S: But I'm working on it (laughs).

65

66 I: Why would you say that?

67

68 S: Um, just because, like, that's kind of my morals kind of go along  
69 with, like, helping other people, and, um, so that definitely, that part  
70 there and then working on the study part, but I'm also studious and I care  
71 about my grades and whatnot, so.

72

73 I: All right. Do you have any other descriptions that you would describe  
74 yourself as a student?

75

76 S: [Long pause] Um, I'm adaptable and I learn quickly.

77

78 I: Okay, what does it mean to you to be an adaptable student?

79

80 S: Um, kind of like, uh, when a professor changes, like, a quiz grade ...  
81 or, a quiz date to something earlier, um, or, you know. You know how it  
82 is, just randomly assigning ... assignment changes and that kind of stuff,  
83 uh, I tend to be able to be, kind of like, on the turn of a dime, I guess, as  
84 you would say, um, yeah.

85

86 I: Okay, and what was the other thing you said? You said adaptable and  
87 ... my goodness, what'd you say?

88

89 S: Uh ... wow, I'm drawing a blank too.

90

91 I: I'll pause real quick and replay it for us.

92

93 S: Okay (laughs).



94 I: So, you said you learn quickly, what does that mean to you?

95

96 S: Um, just kind of, I've always been able to take a lecture and, um, it's,  
97 if it hasn't made sense right away, it makes sense with, um, a little bit of  
98 looking into it. Um, I guess that's pretty much ... being able to piece  
99 another person in it, I can do that pretty quickly with a little, um, yeah,  
100 yeah.

101

102 I: Okay, what does it meant to you be [stutter] to be a studious student?

103

104 S: Just kind of, always being on top, on time, um, also, having your  
105 work done all the time. Knowing when you're test dates are, just kind of,  
106 more the organized side of being a student. Which, I don't know, maybe  
107 that's not what other people think, that's definitely how I take it.

108

109 I: Alright. So, lets say, hypothetically, you're in a class and you get your  
110 exams back, and you look at your exam when it comes back to you and  
111 you're just like, "Yes, I succeeded on this." Why, how do you react and  
112 why?

113

114 S: Um, I guess I'd be pretty happy, but I'm not the type of person to  
115 outwardly show that to other people 'cause I know that sometimes other  
116 people don't get too good of a grade and that has definitely happened to  
117 me in high school and I just, I kind of feel bad instantly if another person  
118 has not. Um, however, I do feel really good about myself 'cause I always  
119 tended to rank myself according to my grades, which I need to work on  
120 too 'cause I don't feel like that's very good for a person, but, yeah.

121

122 I: Okay. Wha- What would you consider to be a success in an exam?

123

124 S: Um, definitely an A, but um, more specifically I tend to, um, after it, I

125 get ... take a test, I think in my head, "Okay, I think I got about this  
126 score", so if I see that score than that's an additional little success. But  
127 also, like, just knowing that I retained information because now being in  
128 college it's a different level and I know that I'm probably gonna get some  
129 B's on tests, but it's gonna feel like a success because um, being able to  
130 retain information that I hadn't retained before I feel like, should be a  
131 success as well, but definitely an A.

132

133 I: Okay, good. Um, and, do you consider a grave curd, grave curd ...

134

135 S: (laughs)

136

137 I: Would a grave, grave curd ...

138

139 S: (laughs) Grade curve.

140

141 I: Yes, would that effect your perception of what it means to be a  
142 success?

143

144 S: Um, for me, no, because in my mind I would ... I actually haven't had  
145 a test grade, grade, a test curved yet, but in my mind I still would've  
146 gotten the score before the curve, so I don't think so, but, you'd have to  
147 ask me that again after I've had a grade curved. (laughs)

148

149 I: Right. So, lets say the person next to you, you feel like they are way  
150 smarter than you are and when exams come back you kind of glimpse  
151 their score as they're looking at it and you did better than they did, how  
152 do you react to that?

153

154 S: That's an interesting question because being in an engineering field,  
155 um, I, I actually have felt like everyone around me is smarter than me,

156 just because, as I said, I came from a small school, so it's kind of my  
157 cousin and I against everyone else. And, so, I don't, I don't know, uh, it'd  
158 kinda be like sitting next to my cousin and getting a better score, but at  
159 the same time I don't know that person as well, so I, I don't know if I'd  
160 feel bad about feeling good about having a better score than them. But  
161 with my cousin it's kind of more of a competition, and we're just like,  
162 "Ha, I beat you", but ...

163

164 I: Yeah, but that's a case of, of familiarity.

165

166 S: Yeah, yeah, and I def-, I definitely think, in that case I would, I would  
167 feel better, but also, kind of, like, step back a little bit and just think that  
168 we're all kind of on the same field. And, sometimes people come off as  
169 being smarter than they actually are and so just kind of realize that that's  
170 a reality, but also, I would feel a little better.

171

172 I: So would, would you revise your opinion, your opinion of them being  
173 smarter than you are, or ... ?

174

175 S: Not necessarily, well, I think I would take it, I'm still learning that I  
176 think, uh, I feel like I rank myself as not as smart as I actually am, kind  
177 of thing, so I feel like I'd more feel like we're on a ... oh my goodness, I  
178 said feel so many times. Like we're on a level playing field, which I  
179 think all of us are, more likely, I don't know. It's interesting.

180

181 I: So, rather than lowering your opinion of them, you might raise your  
182 opinion of yourself?

183

184 S: Yes, correct, yes, I think I would do that before the latter, yes.

185

186 I: Alright. So would you share with anyone else that you did a ... well on

187 that exam?

188

189 S: Uh, my roommates, yeah. My roommates and I are actually pretty  
190 close and they're always ... we're kinda keeping tabs on each other and  
191 ask how your test went and whatnot, so.

192

193 I: Okay. Uh, why would you share with them?

194

195 S: Um, we've kind of, we've definitely bonded quite a bit, but, they're  
196 always interested in what's happening in my life and I'm interested in  
197 what's happening in theirs, and if we don't really ... if we don't do good  
198 on a test or something like ... or an, anything in life, we just tend to build  
199 each other up, but also, um, encourage and support each other when we  
200 succeed, so. Which is nice, 'cause it's kind of like a little family away  
201 from family thing, so.

202

203 I: Sure. Uh, would you share with anyone else that you did better than  
204 the person that you thought was smarter than you were?

205

206 S: Probably not, (laughs), I just ... 'cause I feel like, uh, I don't think I'd  
207 feel good about myself just knowing that, one, that I let my eyes wander  
208 a little bit, but also that I let myself feel better about it too, so I'd  
209 probably just keep that to myself. (laughs)

210

211 I: Yeah. Uh, do you ever compare your grades ... not so much as, "Did I  
212 do better than you", so much as just, "Hey, what did I miss, did you get"  
213 with other students?

214

215 S: Oh definitely, for sure, yeah. I have a friend in BME actually, we  
216 were doing that the other day 'cause we had our first exam for our intro  
217 class and everyone did a little bit rough. Quite a bit rough, (laughs) so

218 we were definitely, kind of comparing like, what we studied on our own,  
219 and like, as opposed to the other person, how are grades reflected that.  
220 We actually ended up getting fairly similar grades, but we definitely  
221 missed different questions so, definitely, I think that helped us kind of  
222 uh, learn the material that we didn't know for the test, so that helped, for  
223 sure, yeah.

224

225 I: Alright. So, lets say you got an exam back but you didn't feel like you  
226 quite succeeded on it, how do you react and why?

227

228 S: Um, I definitely, well, typically we get like, the whole exam back, so  
229 I go back and look at all of the mistakes that, if there's silly mistakes in  
230 there, just kind of, sh ... I don't know how to, how to explain it, not like  
231 shame myself, but like, scold myself in my head because a lot of times I  
232 will make sti, just silly mistakes. Um, but, on the ones that weren't silly,  
233 obviously, I like to go back and like, see if maybe I interpreted the  
234 question wrong, or if I just didn't know the material, and go back and  
235 learn that material 'cause I'll need it for the final, kind of stuff, so. Yeah.

236

237 I: Okay. What do you consider to not be a success on an exam?

238

239 S: Um, anything below a B, probably. Um, there's always that little area  
240 where it's neither a success nor a failure, I, I've always kind of, like I  
241 said, I rank myself according to my grades, but, yeah, I definitely don't  
242 think it would be ... I think it would be more of a failure to get below a  
243 B, just because I tend to keep myself towards the higher end of the  
244 spectrum, just because I need to se, to succeed I need to get better  
245 grades, to keep my scholarship I need to get better grades, kind of stuff  
246 like that, I guess, is how I would think of that.

247

248 I: Okay. So, what if, uh, after you got your exam back, the professor,

249 sometimes they put a anom, anonymized statistics thing on the board  
250 just so you can see how people did, what if you did considerably lower  
251 than uh, most of the other students?

252

253 S: I would definitely need to go find help in that class, I think. For sure,  
254 whether it be peer help, or my instructors help, or SAS, depending on  
255 which kind of class it is.

256

257 I: Sure.

258

259 S: But I would, I'd definitely have to reform my study habits and figure  
260 out what I did wrong studying, does that make sense?

261

262 I: Mm-hmm (affirmative)

263

264 S: Kay, cool.

265

266 I: What if, on the other side of you, the student who sits there, you just  
267 didn't think they were as smart as you are, how would you react if they  
268 did better than you did?

269

270 S: Um, I don't think I would lower myself, but rather raise them up on  
271 the, like, my mental spectrum of people. Um, yeah, definitely, and it'd  
272 kind of be a humbling moment, just to realize that you know, maybe you  
273 shouldn't just judge people on how, on how smart you think they are,  
274 kind of thing, so, yeah.

275

276 I: Okay, so that would be less of a da, reflection on your opinion on their  
277 intelligence, and more a reflection on the fact that you made an opinion  
278 in the first place?

279

280 S: Mm-hmm (affirmative) yes, correct.  
281  
282 I: Okay. So would you share with anyone else that you didn't do well on  
283 your test?  
284  
285 S: Oh, for sure. (laughs) Yeah, my roommates, and, well, I mean, going  
286 back to the other question too, I'd definitely share with my, like my  
287 mother, and if it was a Calc test, I'm really close with my senior year  
288 Calc teacher, I, I called her after my first test and I was like, "Hey, I  
289 think I killed it." But, definitely those people, like I said, sp, support  
290 system, they're gonna encourage me to do better. They'd be like, "Hey,  
291 just because it's a test grade, that doesn't define who you are", kind of  
292 thing.  
293  
294 I: [sharp breath]  
295  
296 S: Bless you almost! (laughs)  
297  
298 I: (laughs) It's like a sneeze just won't come out.  
299  
300 S: I hate that.  
301  
302 I: So, would you share with anyone else that the person next to you did  
303 better than you did?  
304  
305 S: I might share with my mom, just s, so, just because, like I said, it is  
306 very humbling when I like, I dunno, just to realize that you shouldn't  
307 have made that opinion in the first place, kind of thing, so, yeah, cause  
308 it's a learning, a learning opportunity, I feel like, morally, so.  
309  
310 I: Okay. Does it matter to you if your peers think you're smart?

311  
312 S: I try not to have it matter to me, but yes. (laughs)  
313  
314 I: Right, why does it matter?  
315  
316 S: Um, I feel like when people don't think that you're intelligent that  
317 they maybe don't listen to your opinions as much, and don't let you help,  
318 help out on activities, which kind of closes off a door for you to succeed,  
319 and you to help other people succeed, so I definitely think it's important.  
320 And I do worry, actually, that people don't find me intelligent, 'cause I  
321 know my um, vocabulary is not that high. Like, everyday conversation,  
322 um, so yeah, yeah, I do think it's very important.  
323  
324 I: Okay, does it matter to you if your professors think you're smart?  
325  
326 S: Yeah, but I think they know because of the test scores and everything  
327 else, so.  
328  
329 I: Alright, why does it matter if they think you're smart?  
330  
331 S: Hm, I guess it could open up other opportunities for um, even like  
332 helping other classmates, um, projects, that kind of stuff. I haven't  
333 actually learned what opportunities lie on the frontier, but I know there  
334 have to be some.  
335  
336 I: Uh, would you consider recommendation letters as on that frontier?  
337  
338 S: Yes, yeah, for sure. Yeah, definitely, yeah. But, then again, that goes,  
339 that goes back to like, having a relationship with your professor, 'cause I  
340 feel like a student with high grades, as opposed to a student with fairly  
341 high grades, but a good relationship, is gonna have a better



342 recommendation 'cause it's easy to write a good recommendation for a  
343 good student that has good grades, but there might be more passion in  
344 the other one.

345

346 I: The one that you know better?

347

348 S: Mm-hmm (affirmative) yeah, yeah.

349

350 I: Alright. So, tell me about, what motivates you to continue pursuing an  
351 engineering degree?

352

353 S: Um, so I chose bio-medical engineering because I want to go into the  
354 medical field and I didn't really know how I wanted to go to the, into the  
355 medical field, um, and there was a kid that was a year older than me in  
356 high school that came here, and, I think he's a CS major, and he, this  
357 program was, you know, in the works, and was gonna be set to start this  
358 year, and he came back to school one day and he goes, Hayleigh you  
359 gotta check this out, like, you're gonna, you can go, I know you've been  
360 looking for what you should study in hi, in college to go to med school  
361 and ... so I kind of checked it out a little bit, at the same time I was going  
362 to the national FFA convention and there was a guy up on stage talking  
363 about how he, um, designs prosthetics with 3-D printers and um, he  
364 gives 'em to kids in Africa and Syria, and stuff like that, it's actually  
365 called Impossible, but um, that definitely spoke to me. I'm not a very  
366 emotional person and I had tears in my eyes so I was like, "You know,  
367 this is a sign, like, I definitely need to go into this field". So yeah, that's  
368 kind of where it stemmed from. Yeah, and being able to, just being able  
369 to help each other, or, help people with your degree.

370

371 I: Mm-hmm (affirmative)

372

373 S: It's something cool, and it's something to fall back on if I decide I  
374 don't wanna go to medical school.  
375  
376 I: Yeah. So, if you were to make a pie chart of your motivations as a  
377 student, what percent would you say you were motivated by your grades  
378 versus your desire to learn?  
379  
380 S: Ooh, that's good. I wanna say 50/50, but, it's probably more, grades  
381 are probably a little bit higher, which is, which I don't wanna say, I'm  
382 hoping, I need to change that. I feel like I should have a higher  
383 motivation for learning than um, for my grades because you can learn a  
384 lot from a course and not get a good grade in it, so.  
385  
386 I: Sure. Or vice-versa.  
387  
388 S: Yeah, I'd say 50/50 plus or minus.  
389  
390 I: Okay.  
391  
392 S: At the end of the day.  
393  
394 I: Why, why do you feel like that's the distribution?  
395  
396 S: Um, just 'cause grades are really important to me, but also, being able  
397 to learn as much as you can is super important to me too, and I'm a very  
398 indecisive person. (laughs) so I feel like 50/50's safe.  
399  
400 I: Okay. Would that distribution be the same for all of your classes?  
401  
402 S: No (laughs), definitely not. I'm in [econ] and it's really hard for me to  
403 want to learn in that class, just because I don't ... I know in a way it can

404 relate to my major, but it doesn't directly relate to my major, and I love  
405 math and science, and I'm not, this [econ] is a struggle. (laughs)

406

407 I: Sure.

408

409 S: Definitely. So, whereas, in my BME[class] class, there's probably  
410 more of the learning side because, um, the grading in that class is pretty  
411 tough and I know that there's a lot, a lot to learn, whereas I might not  
412 have a fabulous grade in that, and that's okay with me knowing that I  
413 learned so much in that class. So, yeah.

414

415 I: Alright, so, in what ways are your grades important to you?

416

417 S: Um, first off, I, well, I guess I'm always, they've always been  
418 important to me and that kind of stemmed from the whole competition  
419 thing that I had with my cousin ever since kindergarten, it was crazy. I  
420 mean, we'd be at a junior high science and math test and he'd be like,  
421 "what'd you get, I got 100", I'd be like, "I got 102". (laughs) you know?  
422 So I guess it's more of a ... I feel like it's more of a self validation kind of  
423 thing and it's like I, I'm a competitive person, but it's more like  
424 competing with yourself, and I like that. Um, also, my scholarship rides  
425 on grades, so that's a very big thing because I wanna get out of college  
426 with as little debt as possible.

427

428 I: Definitely.

429

430 S: Yeah, so. I guess those would be the two main reasons, but also, just  
431 kind of, I feel like you're fu, I could be wrong, and this could be naive of  
432 me to say, but I feel like a lot of your future does ride on grades, on what  
433 jobs you land, what internships you land, and all that stuff. And all that  
434 leads to more experiences, um, and developing you as a person, so.

435

436 S: Sure. So, in what ways is learning important to you?

437

438 I: Um, like I said, I mean, learning kind of goes hand in hand with  
439 grading in my opinion. Um, because the more you learn, the better you  
440 learn things, the better grades you have, but um-

441

442 S: One hopes. (laughs)

443

444 I: Yeah, (laughs) yeah, no kidding. Um, but, this, I think it's important, if  
445 I learn as much as I can learn, then I can teach other people more, if that,  
446 yeah, I feel like that's how it's important to me because I do like teaching  
447 other people too.

448

449 S: Okay. Let's say you're enrolling in your classes next semester and  
450 there's one class that there's two different sessions and both of them  
451 work with your schedule and it's gonna be required for your major so it's  
452 not like, just something extra.

453

454 I: Yeah, [physics] is that for me right now. (laughs)

455

456 S: So, let's say, th, b, each session is taught by a different professor and  
457 you know them both by reputation.

458

459 S: Mm-hmm (affirmative)

460

461 I: So, professor A, you feel like, you're likely to learn a lot in that class,  
462 but it's gonna be a struggle to keep your grades up. And professor B,  
463 you're gonna have a pretty easy time with your grades, but you might  
464 come out not feeling like you've leaned quite as much?

465

466 S: Definitely A. Just because, in high school I never liked social studies  
467 and I think it's directly because of my social studies teacher was never  
468 good at teaching. We didn't do anything in class and could get an A and  
469 hardly ever show up, I hated going to that class because I felt like I was  
470 wasting time. So that's a struggle, and going back to being an adaptive  
471 person, I think eventually I would learn how to keep good grades in the  
472 other classes, whether be more paying more at, like, more attention to  
473 like, my free time, or devoting more of my free time to that class as  
474 opposed to others. I think that would be the best in the long run.

475

476 I: Okay. Can you think of a situation where your answer might change?

477

478 S: Not really, unless it was a class that I wasn't interested in and didn't  
479 need to know for my major. Since I need to know it for my major I think  
480 it's important that I um, learn as much as I can from that class.

481

482 I: But if it was [econ], you might chose professor B?

483

484 S: Yeah (laughs) for sure. Yeah, definitely.

485

486 I: Okay, so more or less you'd just say, A in general, because you wanna  
487 get as much out of the class as you can-

488

489 S: Correct.

490

491 I: And perhaps you might enjoy it more?

492

493 S: Yes, correct.

494

495 I: Okay. So, tell me about your learning and studying strategies.

496

497 S: Um, before college they were non-existent. Um, I had, right now I'm  
498 kind of experimenting with my studying strategies. I've made several  
499 Quizlets and I don't know how that's going, it's definitely ... it takes a lot  
500 of time to make a Quizlet, so I'm kind of trying to balance that out with  
501 um, how much I'm actually getting from it. Um, I've also like, been  
502 experimenting with re-writing notes, like, writing them first and then  
503 typing them out on the computer and kind of organizing them in a place  
504 that makes sense with me, or sense for me. Um, I've attempted making  
505 flash cards, but that's kind of the same thing as Quizlet, so I tend to lean  
506 more for Quizlet because it has like the, all the study games and kind of  
507 keeps track of your thing, or your progress. And then, for Econ, um,  
508 110, it came with like a pear, Mypearsonlab, I don't know if you're  
509 familiar with that but it's kind of the same thing as Quizlet, but it like, it  
510 keeps track, it keeps more track of your progress more than Quizlet  
511 would and kind of sets up a study plan for you, so definitely been using  
512 that a lot for Macroeconomics because that's my lowest grade right now  
513 and I know that I need to spend more time on that. So, it's definitely  
514 experimental at this point.

515

516 I: Okay. How did you come across these strategies?

517

518 S: Asking my peers, that's, yup, that's the school answer there.

519

520 I: Okay. Um, ha, do you feel like you're, well, obviously, they've  
521 changed over the, just in the past half semester, but, can you describe  
522 how they've changed to me?

523

524 S: Um, I think it changes more with class. For Chemistry and BME I've  
525 used Quizlet quite a bit, um, but also, for, I guess for this past lab quiz  
526 for chemistry it was more like practicing problems 'cause I'm better at  
527 doing that type of stuff as opposed to the other, it was a lab quiz so

528 naturally there's lots of problems you have to work out. Um, like I said  
529 [econ] is Mypearsonlab, c-, I guess they change more for each subject  
530 than as a whole, if that makes sense. And learning to, which, which, um,  
531 oh, why can't I think of the word? Which one works best for each, um,  
532 subject, yeah.

533

534 I: Sure. How did you feel about finding that you needed to spend more  
535 time studying once you came to college?

536

537 S: I kinda knew it was gonna happen leaving high school, so I guess  
538 that's kind of just where I sat, I knew it was gonna happen so I wasn't too  
539 worried about it, I just knew that I need to spend some time figuring it  
540 out.

541

542 I: So, unsurprised?

543

544 S: Yeah, exactly, for sure.

545

546 I: Okay. Uh, do you feel that there's any classes that require you to study  
547 more than others?

548

549 S: Um, yes. I've already taken calculus, so I don't need to spend as much  
550 time taking calculus, are, um, studying calculus as everything else, just  
551 because, like I said, I had a really good high school calc teacher and  
552 everyone recommends from our school to re-take calc one 'cause calc 2's  
553 a little rough here and calc 1 is as high as we offer at my school.

554

555 I: Okay.

556

557 S: Um, so I don't really have to study for that as much. Chemistry I don't  
558 have to study as much for because I had a really good high school

559 teacher, um, but definitely biomedical engineering, because everything  
560 that I get, I know in that class is new this year, so.

561

562 I: Okay.

563

564 S: Yeah.

565

566 I: Do you feel like you enjoy the classes more when you have to study  
567 more, or have to study less?

568

569 S: Um, more.

570

571 I: Okay.

572

573 S: For sure, because I tend to lose interest in chemistry and calculus  
574 because I've already ... especially in lectures because I've already ... I  
575 already know the material, so then I feel like I'm wasting my time.

576

577 I: Okay. In general, how much effort do you feel like you put into your  
578 classes?

579

580 S: Um, I try to put ... enough effort to succeed, if that makes sense.

581

582 I: Sure.

583

584 S: I try to go 100%, but that doesn't happen. People say they go 100%, I  
585 think that's very hard to do, especially when you're not interested in a  
586 class.

587

588 I: Sure.

589



590 S: So, but definitely enough to succeed.

591

592 I: So, do you feel like, enough to succeed tends to be a lot of effort, a  
593 little effort, medium?

594

595 S: Well, I guess it depends on the class. Like I said, with calculus, I, I  
596 mean, I don't have to put in as much effort in it 'cause I can put in 80%  
597 effort and get 100% on the test, kind of thing, if that makes sense?

598

599 I: Sure.

600

601 S: Um, so, it definitely correlates with the class, I think. Like right now  
602 in Macroeconomics I'm having to put in 100% effort because I need to  
603 progress in that class, and BME is always 100% effort, so.

604

605 I: Okay. Why do you put so much effort into your classes?

606

607 S: To succeed. (laughs) definitely.

608

609 I: Okay.

610

611 S: Yeah, and learn as much as you can, I guess. Retain information.

612

613 I: Do you feel like you learn more from a class that you have to put more  
614 effort into?

615

616 S: Yes, definitely, because the effort thing kind of goes in with how  
617 much I knew beforehand, going in, so, yeah.

618

619 I: And it's not learning if it's something you already-

620

621 S: Exactly.  
622  
623 I: Studied.  
624  
625 S: Yes.  
626  
627 I: Do you feel like you tend to put in more or less than your peers?  
628  
629 S: Depends on the class, I feel like I put in more effort in  
630 Macroeconomics, but probably less in BME, even though I'm trying to  
631 put in a bunch of effort, I know that a lot of the students have more time  
632 on their hands than I do so they can, they have the possibility to put in  
633 more effort than I do, time-wise. So, yeah.  
634  
635 I: Okay. Think about a subject or a class, or something, that you had to  
636 put in a lot of effort to succeed, and then tell me about it.  
637  
638 S: Okay, um, definitely BME[class]. Uh, we kinda, we got our first  
639 study guide back and it was like, I think four pages of just questions, so  
640 in order to study you had to go back and answer the questions and make  
641 sure you knew the questions. So, that definitely took a lot of effort, took  
642 a lot of time, quite a few hours, just to answer the questions, then you  
643 had to go back and study it too, so that's definitely, BME[class], I  
644 definitely put the most effort in that class. And I love it, it's awesome.  
645  
646 I: Okay. How did you feel about finding out that you did need to put so  
647 much effort into that class?  
648  
649 S: It stinks at the time when you first realize it, but then kind of when  
650 you're in the, um, the heat of it, you def-, I, I love it, after that because  
651 you're like, "Wow, I'm learning so much." And like, on the completion

652 of our assignments, 'cause our assignments are pretty, pretty lengthy in  
653 that class, they last about a week and when I get done with that  
654 assignment, I turn it in, I feel s, so much relief, but also, just satisfaction  
655 with the fact that I was able to complete that co, that assignment,  
656 because a year ago I would not have known what I was doing. And so  
657 that's really cool to me, to just kind of see how far you've come,  
658 satisfaction, yeah.

659

660 I: Okay. What are you getting out of that experience?

661

662 S: Um, I'm learning how to study, like, what, what tactics work and what  
663 tactics don't, but also, um, we're kind of building mini study groups,  
664 which is cool. That's a new, new for me, um, learning a crazy amount of  
665 information that, it's gonna, all of it's gonna be useful to me in the future.  
666 It's such a large field that there's so many things that go into it that I had  
667 no idea went into it at all. And, yeah, so.

668

669 I: If you had the option, but it wasn't required to take another class that  
670 would give you that same kind of experience, would you take it?

671

672 S: Probably, yeah. Actually I know a lot of major, or, people that are  
673 majoring in maybe EC, or something, that are in that class, that intro  
674 class, just to kind of see how it was because they wish they would have  
675 been able to major in BME, but now it's gonna add on like two years to  
676 their degree, or something like that. And, so I definitely think I would be  
677 interested in ... especially if it was a class that I was learning things that I  
678 kind of wanted to know on the side. So, yeah, yeah.

679

680 I: Okay. Why do you think you would take that experience again?

681

682 S: I just like knowledge. (laughs) I guess is the, the short answer to it.

683 Learning as, like I said, as much as you can, but also, um, it would feel,  
684 although it wasn't contributing to my agree, degree, which probably  
685 would like an elective, or something, um, it'd just be interesting. So like,  
686 the time that you spend in it would feel productive.

687

688 I: Okay. Now think about a subject or a class or something that you  
689 could succeed, but without putting much effort in at all, and tell me  
690 about that.

691

692 S: It's, I feel like it's a struggle because I'm tempted to not go to lecture,  
693 even though I do go to lecture, I'm very tempted to not go to lecture, and  
694 when I am in lecture I feel kind of disconnected to it, so it, it's, it's a  
695 struggle to keep engaged and keep going even, even if I am succeeding  
696 in it, I feel like I should still be engaged in the class and it's definitely  
697 hard to pay attention.

698

699 I: Okay. How do you feel about not needing to put so much effort in?

700

701 S: I mean, in the scheme of things, it's really nice because I, you can  
702 succeed without putting effort in, which means less time, but, like I said,  
703 it feels like I'm wasting time sometimes so that's hard, like, mentally, for  
704 me.

705

706 I: Okay. What do you get out of that experience?

707

708 S: I guess I'm learning how to stay engaged even if I don't want to be  
709 engaged. And also I have, I have peers in those classes that do need  
710 help. Which is nice because I can help them because I have the time to  
711 help them, so.

712

713 I: Mm-hmm (affirmative) So, if you had, again, the option of taking a

714 similar experience, would you do it?  
715  
716 S: No. (laughs)  
717  
718 I: Okay. Can you think of a situation in which that answer might  
719 change?  
720  
721 S: Um, I guess I've thought about being a SAS tutor, and in that case you  
722 would have to take the same class over 'cause you have to go to lecture  
723 to be, know where they are, and in that case I would, definitely, but  
724 that's probably the only case.  
725  
726 I: So, as a matter of trying to help other people rather than trying to learn  
727 it for yourself?  
728  
729 S: Correct, yeah, teaching other people. I love teaching other people.  
730  
731 I: Okay. Think about now, people that you know that are also students,  
732 and think about someone that puts in a lot of effort to succeed, what  
733 does that tell you about how smart that person is?  
734  
735 S: So, I thought of my cousin. Um, we were co-valedictorian, and like I  
736 said we con- we competed throughout our entire lives together and he's  
737 more of the, smart because he works at it kind of person, and I'm more  
738 of the smart because I'm naturally smart, so I definitely, which, and he is  
739 phenomenally smart, it's crazy how well he retains information. We,  
740 we're opposites as far as intelligence goes, I think, and I, I think he's one  
741 of the smartest people I've ever known, and it's all because of how much  
742 effort he's put into it in his life, so. He's a very disciplined, determined  
743 person.  
744

745 I: So, you feel like he is very, very smart, regardless of how much effort  
746 he puts in, or even perhaps because of it?

747

748 S: Yes, I think, yeah, I think a lot of his intelligence lies on how much  
749 effort he's put in throughout his life and it's paid off, and, that's how his  
750 mom is too, so. Just him being a disciplined person and applying that  
751 discipline in the areas, in certain areas, has made him incredibly smart.  
752 And he's naturally smart too, but the effort he's put in has definitely  
753 prevailed.

754

755 I: Okay. Now think about something you know who doesn't have to put  
756 in a lot of effort to succeed, what does that tell you about how smart they  
757 are?

758

759 S: Like I said, I think it, it definitely, they probably lack, and I'm talking  
760 about myself here, they probably lack the abilities to study and, like I'm  
761 seeing now in having to work with that and ... yeah, so I feel like, while  
762 they might be smart, the same level of smart, they haven't learned  
763 certain aspects, or lessons in life that would maybe push them over the  
764 edge a little bit, so that's what I'm working on right now. (laughs)

765

766 I: If you could choose which type of smart to be, which would you  
767 choose?

768

769 S: The latter, I would definitely choose to be the one that put the effort  
770 in because I feel like that's more satisfactory.

771

772 I: Isn't that the former?

773

774 S: Or latter, yeah, sorry, former. My bad.

775

776 I: (laughs)

777

778 S: (laughs) But yeah, definitely, just because I admire my cousin so  
779 much, and just how much effort he's put in, the abil, like, his ability to  
780 put that much discipline into something, I don't have that ability, I, I,  
781 stray, or I, like I'll get distracted and go to something else, and not  
782 having to put in that discipline, like I said, is a lesson that like, I didn't  
783 ever get to learn because I never had to. So now I'm trying to, and, it just  
784 gives a person more depth, I feel like, to have to put all that effort in.

785

786 I: Okay. So, if you were making friends with people, would you rather  
787 make friends with the first or the second type?

788

789 S: Both.

790

791 I: Okay.

792

793 S: Yeah. Gives more dimension to the life.

794

795 I: Okay. Now tell me about a specific time in your life that you received  
796 feedback that, whatever it was you were doing, you were not performing  
797 to expectation, and, just tell me about it.

798

799 S: Okay, so, my calculus teacher, um, calculus was nice for me in high  
800 school because I've learned that I need, that I'm gonna have to study,  
801 that's kind of, that's what she says, is everyone comes to calculus and  
802 they learn, "Hey, I'm gonna have to study", like, they start learning how  
803 to study. And that kind of where it was for me, but I'd say it was the  
804 whole year and not just a semester and so we were probably halfway  
805 through the year and we were starting to hit the harder stuff and I wasn't  
806 studying 'cause I've never had to study so I was like, "Oh, I'll be fine".

807 And, I definitely, I think I got like a C back, or something, and I was  
808 like, "Okay, this is ridiculous", and she kind of, it was after class and she  
809 pulled me aside and she was, "You're, you're better than this, like, you  
810 know how to do better than this". And, it was like, it wasn't, it was like  
811 an underlying disappointment that she had and since I admire her so  
812 much it kind of hurt and I was, "Okay, now I'm motivated to do better".  
813 And from then on I was like, you know, A's on tests, kind of thing,  
814 which was good because it was a turning point but I didn't have to like,  
815 fail first to realize that.

816

817 I: But you feel like you've learned from your failures?

818

819 S: Oh yeah, definitely.

820

821 I: Okay. How did you respond to feeling like you weren't performing  
822 expectation, and the disappointment in your teacher's eyes? (laughs)

823

824 S: (laughs) Uh, I definitely um, it made me feel really bad at first, but  
825 then I took that and I was like, "Okay, she has higher expectations for  
826 me, I gotta live up to those expectations." I've always kind of been the  
827 person that, if people expect more out of me, I gotta live up to those  
828 expectations, I don't like disappointing people, so it definitely fueled my,  
829 yeah, fueled my want to learn, kind of.

830

831 I: Okay. You said that after you started working harder after that C, you  
832 started getting A's. Do you think there were any other outcomes of your  
833 actions?

834

835 S: Um, could you elaborate?

836

837 I: Um, let's see, just, did you notice anything else changing, like, wha,



838 did your teacher change how she behaved about you, did you change  
839 how you felt about yourself as you worked hard?

840

841 S: I definitely felt better because I felt more productive, and she, she's a  
842 pretty, like, always the same type of person. She's gonna like, love you  
843 no matter what, kind of person, but, uh, it was nice to have, instead of  
844 disappointment, like, she was proud of me for actually getting on top of  
845 it kind of thing, which was nice, so, yeah, I guess.

846

847 I: Okay. Did you learn anything from that experience?

848

849 S: Yup. (laughs) I learned that um, I need to study (laughs) for sure, I  
850 learned where, like, how, what it feels like to start struggling before you  
851 fail, and that I need to get on top of it at that point instead of failing first.  
852 But, like I said, it was, it was good to fail because then I knew how to  
853 react to it before college.

854

855 I: Okay. So, you feel like a failure early on was a better thing than a  
856 failure later?

857

858 S: Yes, for sure.

859

860 I: Okay. Um, if you met somebody who was struggling with a similar  
861 situation, what advice would you give them?

862

863 S: I think, for me, when people give me advice it's hard for me to listen  
864 unless they have a back story to it, so I feel like I would tell them that  
865 story and try and help them with that, but maybe also help their study  
866 habits even though mine are still developing kind of thing, yeah.

867

868 I: Okay. Do you care if your peers judge you when you do poorly?

869

870 S: Mm, not really.

871

872 I: Okay, why not?

873

874 S: I just, uh, for me, everyone fails, so if they, if they're judging me for  
875 failing, failing, that's fine because they've failed too and I feel like that's  
876 more where that would stem from, the judgment, because they've failed  
877 before. In a perfect world you wouldn't judge someone for failing, but  
878 you'd rather like, help them with it, so, I just don't think I would mind if  
879 they did.

880

881 I: Okay. Do you care if your professors judge you when you do poorly?

882

883 S: At this level, no, because even if I do have a relationship with my  
884 professor it's not as close as my high school teacher was, but back then I  
885 did because I admire her as a person, and we have a very close  
886 relationship and um, so I took it more personally, I guess is how ...

887

888 I: Okay, why did you care if she thought you were smart or not?

889

890 S: Just the expectation thing, and um, her knowing that I could do better,  
891 and I knowing that I could do better kind of thing, I guess. And, like I  
892 said, we just, we were very close, still are very close, she's amazing so, I  
893 look up to her as a person, I think is why.

894

895 I: Why don't you care as much about if your professors here judge you?

896

897 S: I think I would if I had a relationship that close with them, because,  
898 um, that, me caring about the judgment was more because of the  
899 personal relationship and looking up to her as a per, like, trying, I don't

900 know, uh, yeah, I think it's more the personal relationship side, so if I  
901 did develop a personal relationship with my professors, that, to that  
902 level, I would care then.

903

904 I: Okay. Do think that you would care more if you'd had a personal  
905 relationship with a peer who judged you?

906

907 S: No, because I, I think if I had a personal relationship with a peer, they  
908 wouldn't be judging me, if that makes sense.

909

910 I: Sure.

911

912 S: It's be more, yeah.

913

914 I: Do you think you learn more from an experience that's challenging, or  
915 not challenging?

916

917 S: Challenging.

918

919 I: Okay, why do you feel that way?

920

921 S: Uh, just because, going back to that whole failure thing, um, if I  
922 would've just gotten A's in calculus all year, last year, I would, I mean, I  
923 wouldn't have learned anything. I woulda came here and um, crashed  
924 and burned and had to figure it out. So, definitely.

925

926 I: Okay.

927

928 S: Definitely the more challenging.

929

930 I: Does it matter to you if you succeed during a challenging experience?

931  
932 S: Yes, but I think during the challenging experiences success is  
933 measured more on like, where you started and where you ended up, as  
934 opposed to the letter grade, which, again, is hard for me to wrap my  
935 head around because I've always been a letter grade kind of person, but,  
936 I definitely think it's more of the journey.

937  
938 I: Does, if, um, let's say the challenging experience is something where  
939 you're graded on your participation rather than whether the project  
940 actually is completed perfectly and everything.

941  
942 S: Mm-hmm (affirmative)

943  
944 I: Would you, in that case, consider success on the challenge to be  
945 actually finishing the project, even-

946  
947 S: Yes.

948  
949 I: -though it wasn't necessarily required you, or would you say success is  
950 more based on whether you learned something from that?

951  
952 S: Hm, well, I feel like the learning, definitely, but um, you said graded  
953 on participation.

954  
955 I: Yeah.

956  
957 S: I feel like if you're participating you should be finishing the  
958 assignment, if that makes sense. But, I don't know, that is, that's a hard  
959 question. Um, but, if the assignment was the participation part, I think  
960 the learning would be more important, however, I still feel like it would  
961 be a success to finish the assignment, especially since wasn't, it wasn't

962 expected.

963

964 I: And, would you are whether you succeeded in that capacity or not?

965

966 S: Not so much as the learning part, just because the learning part was

967 the assignment, but I still think, I don't know, it's hard for me to not

968 finish things too, so in that aspect, um ...

969

970 I: Don't like loose ends?

971

972 S: Yeah, yeah, for sure. Uh.

973

974 I: [whisper] You'd make a good assassin.

975

976 S: (laughs) You think?

977

978 I: (laughs) Just kidding.

979

980 S: That's funny.

981

982 I: So, you mentioned several times that you are motivated a lot by

983 helping people. Can you just tell me about your drive to help people?

984

985 S: Um, (clears throat) I, I don't know, I think it's something that's just

986 been embedded in me since the beginning. My mom's like that, my dad's

987 a healthcare provider, so he's like that, so just kind of ... My Grandma

988 was like that, she, I look up to her so much, she's probably the most

989 phenomenal person I've ever met and she was, her role rer, revolved

990 around helping people and seeing that at, at a young age, I think was

991 very impress, apres, uh, my goodness, impressionable, so, I think it's just

992 kind of been embedded in me. I just, I enjoy helping people and, I don't

993 know.  
994  
995 I: So, do you think it kind of comes, at least in part, from imprinting on  
996 role models?  
997  
998 S: Mm-hmm (affirmative) Yeah.  
999  
1000 I: Okay. Um, do you prefer to be able to help people and learn at the  
1001 same time?  
1002  
1003 S: Yeah, yup.  
1004  
1005 I: Okay. So, now that we've talked through all these different ideas  
1006 related to motivation and effort and challenges, how would you  
1007 summarize what you've shared with me?  
1008  
1009 S: Um, I feel like I'm, I, I've learned a little bit about myself and it's nice  
1010 because it was more like a self-reflecting ... I definitely am gonna walk  
1011 out of here feeling like I reflected on myself rather than was in an  
1012 interview because the questions made me think. You know, think about  
1013 things that I don't usually think about, um, yeah.  
1014  
1015 I: Okay. And, so that's, kind of like an insight, would, would you say?  
1016  
1017 S: Yeah?  
1018  
1019 I: Alright, what did you learn about yourself?  
1020  
1021 S: (clears throat) Um, I definitely, more and more am learning that I  
1022 really like to help people (laughs) because that seems to be my answer  
1023 for everything, so I don't think I realized to what extent I liked helping

1024 people, so that's good. Um, but also, I need to study (laughs), I need to  
1025 learn, you know, maybe take advantage of some resources and learn  
1026 what my best study habits are because that's a definitely like, downfall,  
1027 but also I need to, I think I need to apply myself and be more motivated  
1028 about learning and whatnot, so, yeah.

1029

1030 I: Okay. Uh, back to just summarizing. How do you summarize just  
1031 what you've told me?

1032

1033 S: It's definitely the basis of kind of how I live my life.

1034

1035 I: Okay.

1036

1037 S: Yeah.

1038

1039 I: Alright. Do you have anything else you'd like to share?

1040

1041 S: No, I think that's it.

1042

1043 I: Alright, thank you.

1044

1045 S: Yeah.

1     **Interview Transcript 9: Ivan**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/17/2018

4     Transcribed by: Rev.com

5

6     Interviewer: Our goal for today is for us to have a detailed discussion  
7     about your beliefs about perceptions of the nature of your intelligence ...

8     Ma- the discussion will inform my understanding of the perceptions of  
9     engineering students, and will help future decisions by the

10    undergraduate engineering experience, and how it can be improved for  
11    students. I wanna hear your own thoughts and perceptions. I'm expecting  
12    that they'll be different from anybody else's, so no right or wrong  
13    answers, don't worry about it. I aim to understand your perceptions, so  
14    I'll ask questions like, "what do you mean by that?" and "care to  
15    elaborate?" These questions can end up being a little awkward as they  
16    require you to reflect on what you've experienced. So I'll just leave you a  
17    long-paused answer. And take your time, if you need clarification, le-let  
18    me know. Do you have any questions?

19

20    Student: Nope.

21

22    I: All right. So tell me about yourself as a student.

23

24    S: Um, let's see ... can you elaborate on that one? (laughs)

25

26    I: So sometimes people will tell me about uh, adjectives that they might  
27    describe themselves as a student, they might rank in scales on like good  
28    to bad scale. They might tell me about just their life as a student.

29

30    S: Okay.

31



32 I: Anything is fine.

33

34 S: I am ... I'm probably ready. I'm probably middle of pack average. I'm  
35 not exemplary good ... I'm not exampla- ... I'm not like really good. I'm  
36 not terrible I'm just kind of in the middle somewhere. Um, yeah.

37

38 I: All right. So what does it mean to you to be a good student or a  
39 terrible student?

40

41 S: Um, GPA mainly. So ... you know ... because you know, uh, as far as  
42 like, you know, academics and stuff are concerned, GPA is the sole  
43 measure of that essentially, uh, and that's why everything in school is ...  
44 goes off usually as GPA.

45

46 I: Okay. So what about like studying habits? Are there studying habits  
47 that make a student a better or worse student?

48

49 S: It de-depends on the person honestly, because some people can just  
50 sit in a lecture and pick things up and, just, you know do good on tests.  
51 Questions like, "Oh, I remember we were talking about that." And they'll  
52 figure stuff out. Other people have ... other people have to sit, sit, sit  
53 down and work through things for hours and hours and hours for it to  
54 actually take root. Uh, so it really depends on the person.

55

56 I: Okay. So it's-

57

58 S: And how their brain's wired and everything else.

59

60 I: It's sort of an individualized process.

61

62 S: Yes. Yes.

63

64 I: All right. So you told me that it's based on GPA. What to you is a  
65 good or bad or a kind of neutral GPA?

66

67 S: Um, yeah. I'd say anything over 3.5 is good. Is good. And 3.5 to 3.0 is  
68 average and then anything below 3 is probably ... you try not to go there.

69

70 I: That's fair. So I take it you're somewhere between 3.0 and 3.5?

71

72 S: Yeah.

73

74 I: Okay. Is there any other reason that you feel you're an average  
75 student, or is it just GPA-based?

76

77 S: Um, yeah. Yeah. It is probably just GPA.

78

79 I: Okay. So let's hypothetically for a moment. You're taking a class and  
80 teacher hands back the exams. So you look at your exam and you feel  
81 like you've succeeded on that exam. How do you react?

82

83 S: Relief? (laughs) Mainly. Yeah ... that's ... this is kind of, "Oh, okay.  
84 That's good." (laughs) And maybe just kind of a ... that's ...

85

86 I: Okay. Why is relief what you feel?

87

88 S: Normally, I feel (mumbling/grunting). Normally with things like that  
89 ... I try to low ball my expectations, so that I'm you know ... as the  
90 saying is, you know, uh, hope for the best prepare for the worst. And I  
91 try to prepare for the worst and then if if the best comes, then "Oh yeah  
92 that's good." But if I did terribly on it, then it's kind of like, well, you  
93 know (mumbling/grunting).

94  
95 I: So do you take ... you kind of take an approach of protective  
96 pessimism?  
97  
98 S: Yes.  
99  
100 I: (laughs)  
101  
102 S: Yes. That's a good word for it.  
103  
104 I: Okay. So what do you consider to be a success on an exam?  
105  
106 S: It depends on the class, class average. You know uh, you know, yeah,  
107 I mean ... generally anything, you know, north of 80 to 85. That can be  
108 good. Um, you know ... of course and again it also depends on ... on the,  
109 the class averages. And, and you know, in some classes, the class  
110 average is a 50.  
111  
112 I: Yeah.  
113  
114 S: So in that case I, you know, just kind of ... I just kind of say well you  
115 know, a 50 percentile and above is usually where I would consider a  
116 success and below that, like well, I need to go back to study that some  
117 more.  
118  
119 I: (Sneeze) Sorry.  
120  
121 S: Bless you.  
122  
123 I: My allergies have been acting up, sorry. (laughs) Okay. I think it's  
124 gone. Um, would a grade curve change your per-perception of a

125 success?

126

127 S: Not necessarily. Yeah. I, I mean, I, I think as engineering students, we  
128 kind of live and die by the curve, and so now there are some of the  
129 classes that, that if, if it wasn't that curve, I definitely would not have  
130 passed. Uh, yeah. So I'm ... I am ... or ... the curve as most professors use  
131 it, helps the students out as far as ... as far as okay ... well ... if the entire  
132 class didn't ... didn't get something, then maybe there's other factors that  
133 go on with that, other than just the student. Um, so yeah. So yeah, I don't  
134 think the curve necessarily sways it one way or the other. The curve just  
135 shifts the entire spectrum one way. If uh, if that makes sense.

136

137 I: Okay. I think so.

138

139 S: Yeah.

140

141 I: So how would you react if just to the person next to you, you think  
142 they are way smarter than you are, and then as test came back, you just  
143 kind of glimpsed their score, and you did better than they did. How do  
144 you react?

145

146 S: Um, I don't know ... just getting ... probably ... yeah. I mean ... you  
147 know ... a little surprised. You know ... we all have bad tests now and  
148 then.

149

150 I: Mm-hmm (affirmative).

151

152 S: Yeah. So it kind of just depends on ... you know it's and ... and also  
153 whether there, there is a lot of luck. I mean this could be that they get a  
154 different version of test that was ... maybe the professor thought were  
155 the same, but everybody else that took it to know that was ... you know

156 said, "No, version one was way easier than version two."  
157  
158 I: Mm-hmm (affirmative).  
159  
160 S: Things like that happen-  
161  
162 I: Sure.  
163  
164 S: And so it's just kind of ... yeah. So one test doesn't ... isn't really that  
165 good of a ... yeah ... it's a simple sided one.  
166  
167 I: Okay.  
168  
169 S: So-  
170  
171 I: What would happen uh, if this because sort of a pattern where that  
172 person, you were doing better than they were.  
173  
174 S: Yeah. I tend to just keep things to myself, whether ... yeah ... I mean,  
175 you know, if ... I mean they were just kind of ... well, this is how it  
176 shapes out.  
177  
178 I: Okay. Uh, would you revise your opinion of that person being smarter  
179 than you?  
180  
181 S: Um, it depends on what other factors, because ... yeah ...  
182 (mumbling/grunting) okay, okay. Okay. Okay. I said earlier, uh, GPA is  
183 everything in academia at least. Well, in the whole scheme of  
184 intelligence, that's, that's just one aspect. Uh, so it really depends on  
185 what you mean by smarter.  
186

187 I: So what you're saying you might have thought they were like, I don't  
188 know, artistically smarter than you are, rather than in ... book smart. Or  
189 street smart rather than book smart.

190

191 S: Tests like that, our measure of ... measure our book smartness.

192

193 I: Yeah.

194

195 S: You know and so if that pattern manifests itself, then okay, this  
196 person may not be, you know, as book smart as I thought, but at the  
197 same time, they may be way better than actually at design something so  
198 it doesn't break. We're looking at a broken object and troubleshooting it,  
199 and figuring out, "Okay, what's supposed to go on with this?" You know  
200 as far as ... and stuff like that rather than okay, you know ... okay. You  
201 got rays of heat transfer from this element to this element, and bouncing  
202 of which other stuff. Figure it out. Okay. Well. You know ... and so it's  
203 kind of ... all these different areas that play into uh, I guess, overall  
204 intelligence.

205

206 I: Sure.

207

208 S: And uh, school only covers mainly one. You know ... stuff spills over  
209 but it's not quite ...

210

211 I: It's more focused.

212

213 S: Yeah. It's more focused on book-smart, you know, and knowing okay,  
214 you know, if the shaft ... if this part breaks like this, okay, what's that  
215 mean? What ... what's causing that? What is ... What can I do to fix that?  
216 Uh, that's not something they really teach in classes necessarily.

217

218 I: Okay. So would you share with anyone else that you did better than  
219 that other person?

220

221 S: Not (mumbling/grunting) I mean ... (mumbling/grunting) If I was  
222 comfortable sharing my score, I would share my score, but I ... you  
223 know ... but I'm not gonna go around telling everybody, telling  
224 everybody, telling people that you know ... "Oh by the way, you know  
225 what? Joe really got a 50 on a test." I'm not gonna do that. That's-

226

227 I: Okay.

228

229 S: I mean that ... you know I would consider that you know uh, invading  
230 their privacy as far as you know grades are your own business and ...

231

232 I: Sure.

233

234 S: I'm not gonna go around-

235

236 I: Blabbing.

237

238 S: Yeah. Blabbing about that. It's my own thing, that's something else.

239

240 I: So who might you share your own score with?

241

242 S: I don't know, you know, yeah, friends in class who are just curious  
243 about stuff, or you know things like that and you know ... it really  
244 depends.

245

246 I: Okay. So if you did choose to share it with someone, why would you  
247 share your score with them?

248

249 S: I mean ... I don't know ... yeah. Kind of a standard, you know, uh,  
250 after the test, oh, you know ... "Did you understand this problem?" Or  
251 whatever. "How did you do problem three or s- ... " stuff like that. You  
252 know ... probably, it will be in the context of ... okay. How do you think  
253 you did on this or what ... did you understand this question and s-stu-  
254 stuff like that as far as ... you know as far as ... Grade scores are a way  
255 of, of uh, you know uh, quantitative measuring. Uh, if you understood  
256 something or not.

257

258 I: Mm-hmm (affirmative).

259

260 S: So that was down your one number, you'd say okay, this person  
261 probably understands this better than I do, or vice versa. Um, yeah ...  
262 yeah. And so then as far as, you know, okay, maybe I got a better overall  
263 score, but I tanked ... I tanked probably three, but my buddy, you know  
264 got a lower overall score, but got all the points on that problem, so then  
265 at that point it's you know ... perhaps I didn't understand three and he  
266 did, you know and something else we're gonna talk and figure out. And  
267 you know ... if he's gonna help him with three, I'm gonna help him with  
268 whatever he missed and kind of figure stuff out.

269

270 I: Okay. So does ... exchanging information, not so much that you  
271 wanna compare score but just to figure out what you did wrong.

272

273 S: Mm-hmm (affirmative).

274

275 I: And how to fix it.

276

277 S: Yeah.

278

279 I: Okay. So let's hypothetically say that you get a test back and you don't



280 feel like you succeeded on it, how do you react?

281

282 S: Well, crap. Essentially, yeah. I will try and figure out, okay, why did I

283 ... you know why did I miss the points that I missed? You know uh, you

284 know I ... figure out what I didn't understand, and then is this something

285 I'm gonna need on future mid-term tests? Than I'm going to ... That you

286 know that, that I need to you know sort of learn on this on other quizzes

287 and tests throughout the semester, or is this something that I can for now

288 put off until the final comes around. Because as engineering students,

289 we've only got so much to try to take in and affirm at a time. You don't

290 necessarily want to, try and go relearn something if it's not gonna come

291 up again for another three months. You say okay, you know didn't

292 understand this, but I'm gonna take this, I'm gonna exit and then

293 explaining it, and just kind of put that to the side to the side, you know,

294 for now and focus on trying to do better the immediate upcoming tests to

295 help pad that grade. To, to pad that grade, versus trying to learn

296 everything at once and try to, you know, keep that knowledge from, you

297 know, evaporating and leaking out wherever it goes between, you know,

298 time A and time B when you have a test over it. Uh, but if that makes

299 sense.

300

301 I: Yeah. More or less.

302

303 S: So-

304

305 I: So how would you react if the other students in the class did a lot

306 better than you did?

307

308 S: Well, I would know that I need to go study and just basically do, do

309 that same process of okay, well, you know I'm actually not, not getting

310 something. Uh, so I need to figure out what I'm not getting. I need to

311 figure out, is that something I need to learn, you know or is that  
312 something that I can push off until I'm a little bit less busy?

313

314 I: Okay. So what if you uh, again saw the test scores of somebody else,  
315 and this time there's someone you don't think is as smart as you are but  
316 they did better than you did, how would you react?

317

318 S: Well, apparently I misjudged them because they did better than I did,  
319 so I mean, you know I mean, you know, test scores are, are usually  
320 pretty objective. You know as ... especially in engineering because  
321 everything is math based. Uh, so it's yeah ... it's usually fairly objective  
322 as far as okay. Well, you know if I got 85 and "Joe" got a ninety, well,  
323 "Joe" in essence knows more about the subject than I do. And so ... I go  
324 okay, you know, He knows more. And something ... so if he tells me, "I  
325 know this is wrong," I should probably listen.

326

327 I: Okay.

328

329 S: You know because ... because he obviously knows about this  
330 particular subject than I do, but at the same time, you know, if I'm in a ...  
331 if I'm in a second class with "Joe", you know, that doesn't necessarily  
332 mean that he knows about that other subject than I do, it's like you said  
333 very focused on one particular part of one subject. Um-

334

335 I: Sure.

336

337 S: And so as far as you know, being ... as far as being overall smarter or  
338 not ... that doesn't really have that much of a bearing. You ... you ... you  
339 know, that's one part of a very large array of things that you have come  
340 at all average out, figure out your overall (mumbling/grunting). If  
341 somebody is, you know, smarter or whatever, that's ... it all depends on

342 how you define "smarter", I guess.  
343  
344 I: Okay.  
345  
346 S: And so ...  
347  
348 I: So would you share with anyone else if they did better than you did?  
349  
350 S: Once again, no. Because again that's their grade, that's their  
351 prerogative.  
352  
353 I: Mm-hmm (affirmative).  
354  
355 S: And maybe their uh, their definition a you know ... of doing well on a  
356 test is a 95, and I got a 90. So for me, I would be ... you know, I ... you  
357 know, I'd be pleased where I am with a 90, but maybe they aren't ... and  
358 so once again I'm not gonna go spreading that around because you know  
359 I ... you know, you know, that's their thing I let and deal with that as  
360 they see fit.  
361  
362 I: Sure. Would you share with anyone else that you didn't feel like you  
363 did so well on that test?  
364  
365 S: Well, yeah. Yeah. I mean that's kind of, kind of a that seems to be a  
366 natural student thing to do as far, as far as ... "Hey, how did you do on  
367 that test? Uh, Not uh, not so hard." And kind of a whole how this test  
368 banter ensues of, I don't know, how did you do this and what about this?  
369 And did you account for this other thing?  
370  
371 I: Sure.  
372

373 S: And that whole dialogue starts to happen.  
374  
375 I: Okay. Does it matter to you if your peers think you're smart?  
376  
377 S: Not really ... I mean ... I ... I've had some peers thinking I am smart,  
378 and I had, I had some that I think I'm dumber than a box of rocks. You  
379 know uh, but it's all ... it all depends on what we're talking about  
380 ...(mumbling/grunting) because I may not be the best. You know, uh,  
381 academic student as far as figuring out how radiation heat transfer works  
382 and being able to do some nasty calc II integral in 30 second. I'm, I'm  
383 I'm not the guy to do that. But at the same time, if I were in  
384 measurements lab, I need to wire up some complicated sensor, I can  
385 usually look at a diagram and usually put things into practice and I'm  
386 better at that than the other ... most of the uh, most of the math wizards  
387 and stuff like that.  
388  
389 I: Okay.  
390  
391 S: That's not to say they're not important, it takes, it takes both kind of  
392 people.  
393  
394 I: So together, you're unstoppable.  
395  
396 S: Exactly, right?  
397  
398 I: (laughs)  
399  
400 S: Yeah. Yeah. Well ... But, but then again, for that to work, when  
401 you're working together, with people like that. I would trust the math  
402 people to go do the math, because I know I don't know. I'm probably,  
403 I'm probably gonna mess something up. Just say okay. You know you

404 guys go, you know go do that stuff you do well, and then I'll do the stuff  
405 that I do well and then we'll...

406

407 I: Combine forces.

408

409 S: Yeah. Exactly.

410

411 I: Yeah. Keep seeing the pen cap out of the corner of my eye and  
412 mistaking it for a cockroach. Driving myself crazy here. Go away. Over  
413 there. Sorry. (laughs) does it matter to you if your professors think  
414 you're smart?

415

416 S: Hmm. Professors um, the professor's perception of that would be  
417 based mostly on the, the academic grades of that class.  
418 (mumbling/grunting). And there are some classes that, you know, that  
419 are very ... (mumbling/grunting) ... just you know ...  
420 (mumbling/grunting) ... with grading, faculty try to be very objective as  
421 far as ... (mumbling/grunting) ... as far as saying, okay, you know. You  
422 get you know extra GPA stuff, if you get higher and higher, you know,  
423 but at the same time you have to be above a 70. Because if you're below  
424 that, then you're not really learning the material that we're trying to  
425 teach. (mumbling/grunting) ... and so uh, for me at least,  
426 (mumbling/grunting), I was also trying to get best the GPA that I can...  
427 (mumbling/grunting) You know uh, and I also try to you know, try to  
428 pass the GPA, but I can't. Excuse me. But at the same time, if I'm not  
429 you know, the highest scoring person in the class, you know that doesn't  
430 necessarily bother me because you know I, I know I'm not super book-  
431 smart. As long, as long as I can stay you know A or B range, I'm, I'm  
432 good. You know there's been, there's been some classes where I've had  
433 to slide down into the Cs and Bs, you know clawing for a C. And those,  
434 those, those are the classes that usually I'm not super, super interested in.

435 And so those are usually the ones where I'm just you know my goal is to  
436 keep a C and to pass the class and get through, it and then never touch it  
437 again. Um, kind of deal. And so uh, I don't usually have a ton of  
438 interaction with the professors you know outside or after the classes.  
439 Um, you know ... and so I just kind of melt into the vast number of  
440 students in the lecture hall. I just kind of sit there and do things and go  
441 about their day and don't every really I don't know. Necessarily get to  
442 know the professor.

443

444 I: So in general would you say that you don't really care?

445

446 S: Not really.

447

448 I: Okay because you're just kind of a face in the crowd?

449

450 S: Yeah.

451

452 I: All right. So what motivates you to keep pursuing an engineering  
453 degree?

454

455 S: I wouldn't know what else to do to be honest. (mumbling/grunting)

456 Uh, This is gonna take a while. I'm gonna start at the beginning here.

457

458 I: Sure.

459

460 S: I grew up in a very technical family. My dad is a mechanical  
461 engineer, my mom is a mechanical drafter. They work for the same  
462 company.

463

464 I: Okay.

465

466 S: Yeah...(mumbling/grunting) ... so often my dad is ... my dad is often  
467 working on machines at the plant that are making things that my mom  
468 designed molds for. Uh, and so because of that, you know a lot of our  
469 dinner table talk at home is, is, is you know, "Is, is it's like hey you see  
470 what they're trying to do to the PVC8 line?" Like that's not gonna work  
471 ... " you know. (mumbling/grunting) Yeah. So all those technical stuff  
472 that goes on in my house, yeah. (mumbling/grunting) Like normal  
473 normal dinner conversation is, "Here here's this plastic salt shaker ...  
474 whoa, how did they make that kind of thing?" So I grew up doing that.  
475 Um, and I just kind of you know I was there from the start. I got nature  
476 and nature from both sides and everything else. Uh, to where you know  
477 I'd gained enough of the knowledge both how things kind of work and  
478 everything that coming to engineering school, actually learning the math  
479 and physics behind it, to then turn around and be able, and be able to use  
480 that math and physics to predict what's gonna happen if I design  
481 something, I think that's kind of cool that I can use that stuff to actually  
482 to predict, okay, if I design this it's gonna break. Versus if I put  
483 something else, then it's gonna, it's gonna hold.

484  
485 I: Okay. So you just kind of found yourself put on that track then.

486  
487 S: Yeah. Yes. But I stayed on that track willingly.

488  
489 I: Sure.

490  
491 S: It, it, it's something that I ... I don't know. Even when I was always  
492 messing around with tools. And rubber-banding toys together to make  
493 everything and stuff like that.

494  
495 I: Okay. Have you ever considered anything else?

496

497 S: I was looking joining the military for a while. Uh, yeah, although  
498 (mumbling/grunting) mot off the time, for most of this military carrier,  
499 they, they're really looking for warm bodies to, to do uh, you know what  
500 ... you know ... do what the guys way up in the chain of command are ...  
501 they can make a decision and say, "Okay, we need you to go around this  
502 way and flanking maneuver and that stuff."

503

504 I: Um ... so they are just minions, basically.

505

506 S: Uh, even the NCS, that's your corporals and sergeants and stuff.  
507 Fairly on the ground. They have a lot of latitude of okay, well how are  
508 you gonna do this? But at the same time that level of latitude is okay,  
509 take that hill okay. We're gonna go straight up. We're gonna circle it  
510 once and then go straight up. So ... it's not a ton of you know well you  
511 know if we call in an artillery or air strike or, or those other options  
512 (mumbling/grunting) that maybe better suited work to the end goal of  
513 what we're trying to do, that's not something that you need especially to  
514 see or interact with as far as what's out goal, or what we're trying to do.

515

516 I: So are you saying you'd like to be in some sort of occupation with  
517 more uh, brain power like calculation than just an infantry man?

518

519 S: Uh, yes. Yeah. Yeah. Because ...(mumbling/grunting)... I feel that I  
520 have uh, gifts and skills that would be much better uh, utilized in  
521 designing the gear that they'd use to accomplish that mission than  
522 actually going and doing it myself.

523

524 I: So you'd also rather be a support network than a soldier.

525

526 S: I mean going and doing it is really fun, don't get me wrong, you  
527 know, but at the same time, I wanna also be that one guy that's always



528 checking everything ever being okay, and how could this be better you  
529 know and what, you know, what kind of sticks and rocks and stuff can I  
530 strap on here to make it vibrate less or you know shoot more accurately  
531 or things like that. I always kind of wanna take things and then you  
532 know.

533

534 I: Tinker?

535

536 S: Yeah. Yes.

537

538 I: Okay.

539

540 S: Yeah. I'm a tinkerer. I just kind of ... a good example is a baseball  
541 cap. Well, I put uh, zip ties in there.

542

543 I: Yeah. Yeah. I see that.

544

545 S: I carry a flashlight, that's-

546

547 I: Self-made headlight.

548

549 S: Exactly. Just put it through like that and then yeah. Yeah. Headlight.

550 And I took ... I took this little clip deal and attach it. I fixed that to the

551 back, and then ... I've got the other side attached to the backpack, so if

552 it's windy I can just reach back and clip it on there. I can just ... if the hat

553 falls away, it's tethered.

554

555 I: Yeah. That would help.

556

557 S: Yeah. Yeah.

558

559 I: Windy days and hats don't go well together, unless you got a tethered.

560

561 S: Yeah. Right. Yeah. And that came in really handy hiking around the  
562 mountains just a couple summers ago because it was 70 mile gust of  
563 winds that's like.

564

565 I: Yeah. I bet. That seems pretty clever.

566

567 S: Just like eh, okay, just ... say hat falls off no problem it's tethered.

568

569 I: Yeah.

570

571 S: So yeah. Yeah. If I just, I just kind of tinker with everything.

572 Essentially.

573

574 I: And so just like doing it and that's what you wanna keep doing  
575 basically?

576

577 S: More or less. More or less.

578

579 I: Okay. So tell me. If you're thinking about yourself as a student, and  
580 what motivates you to sit down and study something. And you're  
581 making a pie chart of your motivations based on your grades versus your  
582 desire to learn the subject matter.

583

584 S: Mm-hmm (affirmative).

585

586 I: What would you say would be the percentage of each of those?

587

588 S: (mumbling/grunting) It kind of depends. It kind of depends on the  
589 class. You know as far as you know ... there's some things that are really

590 want to learn. For example that would be uh, machine design two.  
591 Depending how the forces of shafts and gears and the basic gear boxes  
592 work... that's something that I've always been interested in, and so, and  
593 so stuff like that, you know it would ... I would sit down and ... I would  
594 sit down and work through those because that's something that I was  
595 interested in and wanted to learn about, versus something like heat  
596 transfer, or engine econ or classes like that. There are things that ... heat  
597 transfer, I thought it was cool to see the concepts and the math behind  
598 how it works and everything. But when I started having to do the math, I  
599 usually will screw it up. Uh, and so for me, so for me, classes like that,  
600 it's like I can see the utility of it, I can see how it's used, I can see why  
601 we're learning it, but at the same time, I'm not partially very interested in  
602 that, so classes like that usually is more on the grade.

603

604 I: Okay.

605

606 S: Which one is gonna go into ... okay. This is class I'm not interested in,  
607 but I need to pass it, so I need to go and get decent grades, so I don't  
608 have to retake it.

609

610 I: Okay. So let's say you're talking about a class you're interested in,  
611 what would the ratio be?

612

613 S: Yeah. Probably 70/30 or so. But ... 70 being I have wanna learn about  
614 it and 30% being okay, because as interesting as this is I need to do this,  
615 otherwise I'm not gonna get a good grade in the class, and then that's  
616 gonna yeah hurt the overall GPA and stuff.

617

618 I: Okay. How about a class you're not interested in then?

619

620 S: Probably either 70/30 or 80/20 the other way. I don't know. You

621 know, as far as, as far as you know, the 20, 30% being okay, I don't like  
622 this, but I can see how this could be useful sometime, so I wanna ... I  
623 wanna handle this in case I need to, but at the same time, that's not  
624 something that I want to go seek out to have to do. It's just that, it's just  
625 that you know if it falls in my lap, I can be like, "Oh, hey I think I'm, I  
626 think I remember kind of how to do this," and be able to work, work it  
627 out and figure it out.

628

629 I: Okay. So in what ways are your grades important to you?

630

631 S: Honestly, it's kind of one of those things where it's just... It's just a  
632 number. And so, higher numbers are better. You know and if the number  
633 gets too low, then why did you bother with it? But at the same time it's  
634 not really ... it's not the end all be all ... of what I'm getting out of school.  
635 Uh, so it, it's important to graduate, uh, it's important for GPA on job  
636 applications.

637

638 I: Mm-hmm (affirmative).

639

640 S: But outside of that, I don't have a burning desire to have an A in every  
641 class.

642

643 I: Right.

644

645 S: I'm just not that person. Um, yeah. Yeah. So and I don't put this much  
646 emphasis on grades as some other people do. I'm just kind of more of  
647 uh, "okay, you know and I need to know how to do this. You know, and  
648 then knowing how to do it," you know, in vast majority cases will allow  
649 me to, to, get you know a B, you know, ish plus or minus whatever. You  
650 know and then ... and be able to pass the class. Uh, and so ... yeah. And  
651 so ... it's more of just kind of a ... it's I guess what I'm trying to say is I

652 see grades more of as a means to an end. You know to a degree-  
653  
654 I: Okay.  
655  
656 S: Not necessarily as the be all end all of why I'm in school.  
657  
658 I: That makes sense.  
659  
660 S: Um, and so ... yeah.  
661  
662 I: Okay. In what ways is learning important to you?  
663  
664 S: Uh, Oh gosh. Let's see (mumbling/grunting). I've always kind of  
665 bought into the phrase of ... the whole like knowledge is power kind of  
666 deal, and not necessarily that I want like you know not like I wanna be  
667 president of have like massive, massive power or anything, um, but ...  
668 I've always liked to learn specifically I guess how, how different  
669 mechanisms work, and how does the ignition work? Or how does the  
670 gear box work? And what's the differential do? and stuff like that. Um  
671 and I, I just like to accumulate all this knowledge of kind of how things  
672 work and what different things do, because then one of the situations  
673 that .... like oh, you know for example, say the door handle falls out the  
674 door, and say well okay, well so I, I need to figure out how to do this.  
675 Oh, well this other thing has no ... has not relation to this. Just wanna ask  
676 if that does kind of the same thing. I wonder if I can just kind of  
677 replicate that on this other application, and I've done that a couple of  
678 times and it's ... yeah. And, and it ... you know and it's worked and it's ...  
679 it's really a good feeling of being able to do that.  
680  
681 I: Sure.  
682

683 S: To help yourself or other people out of a jam. Uh, I've been compared  
684 to MacGyver a few times.

685

686 I: Yeah. That's a fun show.

687

688 S: And I just kind of like the whole being able to figure things about and  
689 you know just kind of ...

690

691 I: To people joke about be ware- being wary of giving you their  
692 cellphone?

693

694 S: No. No I am not very technology savvy compared to most of this  
695 generation I'm not ... I don't know how to.

696

697 I: I'm just referring to the joke in the newer MacGyver show where Jack  
698 always says yeah don't give him your cellphone. It's not coming back.  
699 (laughs)

700

701 S: (laughs) Yeah. I mean (mumbling/grunting)... yeah. I mean...  
702 (mumbling/grunting)

703

704 I: Yeah. He usually just takes the part of the phone, he uses the pieces  
705 inside of it and then the phone is dead.

706

707 S: Yeah.

708

709 I: Jack has given up on nice phones.

710

711 S: Yeah. I, I try my hardest not to be too destructive you know when try-  
712 when trying ... when trying to figure out stuff like that. When it comes  
713 down to it like well, if it's either, you know terra-park this little thing or,

714 you know, stay locked in the room for over three hours. You kinda gotta  
715 weigh with the options and say okay, is it worth tearing apart the five-  
716 dollar stepper to get the string out of it to fix something.

717

718 I: Or perhaps if it's a locked-in-a-room, for three hours scenario, how  
719 bad do I have to go to the bathroom, (laughs)

720

721 S: Yeah. Exactly. Yeah. Exactly. Yeah. Yeah. It's the kind of thing. Uh-

722

723 I: Okay. So to your knowledge it's gateway to the ability to do things  
724 sort of?

725

726 S: Yeah. Yeah. Yeah. That's part of this ... you know, the more  
727 knowledge of things you have, the better you can take it and apply that  
728 knowledge to other situations to coming to conclusions that there people  
729 may not.

730

731 I: Sure.

732

733 S: Yeah you it's not necessarily you know it's not necessarily just you  
734 know oh, you know ... you know, Brad got a 90 and I got an 85, so he's  
735 smarter than me ... I don't know ... in that one specific instance, maybe  
736 ... but ... you know, but how often is that one specific thing gonna come  
737 up and you know by random chance of whatever you happened to get  
738 yourself into in life, this that specific thing that specific scenario kind of  
739 go versus ... I guess versus I've had new ... I try to learn as much as I  
740 can, about everything that I can, you know, so that when I presumably  
741 see a situation I have much more background knowledge to draw on, to  
742 figure out okay, what do we do? I don't know ... I just try to, you know,  
743 and you know it's ... yeah, yeah, I just try to have the biggest overall  
744 bank of, "Hmm that looks familiar" kind of stuff as far as ... I don't

745 know.

746

747 I: All right. So let's pretend you're enrolling for class next semester-

748

749 S: Mm-hmm (affirmative).

750

751 I: And there's one that you need to take.

752

753 S: Mm-hmm (affirmative).

754

755 I: Maybe you need to take for your major, maybe you just it need to  
756 graduate but you see that there's two uh, lecture times available. Both of  
757 them work within your schedule, but they're taught by different teachers.

758

759 S: Mm-hmm (affirmative).

760

761 I: So you've heard of the both teachers by reputation, if not, taken class  
762 from them before. Professor A you know that you're going to have a  
763 really rough time keeping your grade in that class-

764

765 S: Mm-hmm (affirmative).

766

767 I: But you know that you'll come out having learned a lot, but professor  
768 B, you know that you might not learn as much, but it's not gonna be a  
769 struggle to keep your grades up in that class. Which one would you  
770 enroll in?

771

772 S: Probably professor B, honestly. (mumbling/grunting) Uh, yeah ...  
773 because ...(mumbling/grunting) because going back to that whole you  
774 know like try to retain as much of the knowledge that I can to fix things,  
775 if I have a bunch of knowledge about something that is not interesting



776 that much, it's probably gonna go the way of the dead-o, and just get  
777 flushed out by next semester's knowledge and you know uh, the pieces  
778 that are retained are usually things ... that I will, you know, pick up and  
779 ... even from those lectures of, of, of oh, okay that's a useful piece of  
780 information. Uh, I usually remember things like that. Uh, you know, but  
781 if professor A, you know, goes all the way into how to derive the  
782 integral or something, and makes us do that on all the problems versus  
783 professor B just you know gives us derivation on the board, says okay  
784 yeah just wave your hand some and then this, this algebraic thing falls  
785 out, we're gonna use this. I would make sure either... take Professor B,  
786 (mumbling/grunting) you know because maybe I don't learn all of the  
787 stuff that necessarily comes in behind everything, uh but at the level of  
788 of those things you talk about in engineering school, you usually learn  
789 the details of how stuff works anyway. Uh, so I may not need to know  
790 all of the you know quantum physics that go on behind nuclear reactor  
791 theory, but at the same time, you know having that basic knowledge that  
792 professor B would give for the same course, is probably gonna get  
793 enough for me and I'm probably not gonna remember the other stuff  
794 over topic B.

795

796 I: All right. So you feel like you still learn enough with professor B.

797

798 S: Yeah. Yeah.

799

800 I: And then keep your grades up.

801

802 S: Mm-hmm (affirmative).

803

804 I: Okay. Can you think of a situation in which your answer might  
805 change?

806

807 S: If I was really passionate about wanting to learn that specific subject,  
808 I might choose professor A because if that's something I really wanna  
809 delve deep into, you know, and wanna know exactly how all those  
810 pieces fit together, then A would be a better choice for that. And I know  
811 that because of something that I want to learn, I'm not gonna have to sit  
812 down and force myself to do a bunch of extra stuff that I may never have  
813 to do with professor B. But at the same time if that's something that I  
814 want to learn, it's much easier for me to do that. Uh, yeah. Uh, so ...  
815 yeah. Yeah. So ... yeah.(mumbling/grunting) I guess that's kind of my  
816 answer there is... Depends on if it's something that I really wanna learn  
817 or not.

818

819 I: Okay. Now tell me about your strategies to study and learn material.

820

821 S: To be honest I don't really have one, I just kind of fly by my pants.

822 And it's, it's managed to work okay so far.

823

824 I: Okay.

825

826 S: Uh, yeah.

827

828 I: Have you always done that?

829

830 S: Pretty much. Pretty much. Yeah (mumbling/grunting) okay. Okay.

831 Okay. I guess we can ... what could be considered strategy is normally ...

832 there's is normally an hour or two, you know uh, before I have a ... we're

833 having a midterm, I'll sit down and go through all my notes that show

834 you how it could work, it could be on the mid term and make sure I

835 understand kind of how to do all that stuff. So that's fresh in my brain

836 when I get in the test. Yeah. I can you know (mumbling/grunting)... take

837 a test I can say, "Okay. You work this problem this way. This other one

838 you kind of have to work this kind of sideways, backwards and figure  
839 out this other things that you need to know. Beginning with problem A  
840 of problem one," just kind of you know, I'm just gonna try to refresh  
841 myself because I go into a test and stuff. Uh, I don't, I don't really have a  
842 like you know, I'm gonna block out two hours of every Wednesday night  
843 to study this class and three hours every Thursday to study this other  
844 class, I, I don't have a set thing like that. I just kind of ... float around  
845 whatever I think I need to study.

846

847 I: Have you had to do this more over time as you get older and more  
848 difficult courses?

849

850 S: Mm... Have to do what more?

851

852 I: Just have you had to do this reviewing for an exam where as you get  
853 into more difficult courses?

854

855 S: That's something that I started doing ... my first year, uh, here, uh, I  
856 was a transfer student. I took a year in community college.

857

858 I: Okay.

859

860 S: So I transferred in EP1 and Calc one and two, so I went to community  
861 college for that, to first university course. You know, you know, first  
862 university course load for the semester was Calc 3, EP2, statics, uh, and  
863 I think RPC at the time. You know um, so basically I don't know, I  
864 would start getting into the courses that I hadn't at least had a little  
865 background in from two years of high school ... honors physics and a  
866 calc 1 courses spanning the entire school year. Uh, my senior year of  
867 high school once I started getting into things I hadn't encountered in that,  
868 that wasn't familiar. That's when I started really going over things before

869 the tests and saying, okay .. you know... do I know this or something...  
870 and I carried that all that way through engineering schools and all the  
871 way through dynamics and thermo... and measurements and controls and  
872 all the way up and I'm still doing it and it still seems to be working. And,  
873 and study habits, that's one, that's something that's very individual based.

874

875 I: Mm-hmm (affirmative).

876

877 S: There's no one size fits all solution to that. That's something that you  
878 just kind of have to figure out, and normally when you get to teach to be  
879 a junior or senior engineering school, you've usually figured out what  
880 would works for you.

881

882 I: (Sniff) Sorry, I have that sneeze trying to come back.

883

884 S: Yeah.

885

886 I: Okay. Um, how did you feel when you realized you needed to start at  
887 least reviewing things before midterms and such?

888

889 S: I mean. I didn't necessary want to if nothing less than out of just pure  
890 laziness. I just didn't wanna sit down and have to review and stuff, but at  
891 the same time, I knew I needed to because I knew that if I didn't, I was  
892 not gonna do so well in the test, because maybe the stuff that we  
893 covered, you know, in the last week would be fresh in my mind, already  
894 it's fresh enough versus that stuff we covered three weeks ago, has  
895 already been washed out by other things. And you go through and put all  
896 of that knowledge from that one class and it's, it's documented in the  
897 notes and stack all that up in my brain, so I can go through all of that, for  
898 that test and you know after that test, it's not gonna come up again until  
899 that final. So, so it's not necessarily gonna matter that much, between

900 now and the final, if all that stuff gets washed out again, because before  
901 the final, I'm gonna go back through, put it all back in there. And use it  
902 again in the final.

903

904 I: Right.

905

906 S: (mumbling/grunting) Uh, and then, that so ... so it wasn't ... I, I didn't  
907 necessarily feel bad that I needed to study, because I started getting in to  
908 you know upper-level calc classes and you know upper-level physics  
909 and stuff like that, and you know it's, it's hard stuff and it ... almost  
910 everyone has to study. Uh, and so that wasn't necessarily, like I didn't  
911 take it as an insult to my intelligence or anything, it just kind of, oh well,  
912 this is par of the core for these class, is ... this is why people, drop out of  
913 engineering, is because there's this extra stuff you have to do and some  
914 people don't want to do it, and they start getting Ds, and have to flunk  
915 out of the program.

916

917 I: Right.

918

919 S: So I just kind of accepted that, well, I need to do this.

920

921 I: Sure. (sneeze) Excuse me. Okay. All right. Okay. In general, how  
922 much effort, would you say that you put into your classes?

923

924 S: Less than I should. (laughs). Um ... yeah. I mean ... yeah. I mean it's  
925 just kind of a ... like I said before, I just kind of wing it as I go uh, and  
926 try to figure stuff out. Um, ... I don't know.

927

928 I: Okay. So ... basically less than you should. Why, why do you make  
929 that conclusion?

930

931 S: Mainly just I don't know, uh, ... off of talking to other students. And  
932 then seeing how you study for, you know, four hours for that exam, and  
933 you know, versus, I just, you know versus you know I just went and did  
934 my you know, you know uh, my ritual hour before the test cramming  
935 you know ... and you know ... and then you know maybe they got a 93  
936 and I got an 86 ... I don't know ... well you know 86 for me is decent.  
937 That's good enough.  
938  
939 I: Sure.  
940  
941 S: So then I can spend that time. I can spend the extra three hours doing  
942 other things, uh, and so it's ... I don't know, so ... although another thing  
943 is, I'm, I'm not exactly the best at time management. I tend to get easily  
944 destructed and stuff like that, so all the time, for me to do that same level  
945 of you know ... of, of, of studying, I would have to spend like you know  
946 six or eight hours and I just can't sit still for that long. And you know I  
947 just don't ... have to work on one thing and just go ... I, I just can't do  
948 that. Uh, yeah. Just sort of taking the approach of, of ... I don't know of  
949 memorizing. Okay, you know ... and you know  $A \times B$ , plus  $X$ , you  
950 know, uh, gives you the force on whatever it is ... and I think the  
951 approach of okay, what's  $A$ , what's  $B$  and what's  $X$ ? And then  
952 understanding the physics side of okay, well, if  $A$  is your radial arm  
953 length and  $B$  is you know ...  $B$  is your torque or something and then you  
954 take and divide the other out. You know that gives you this and you  
955 know ... I tend to go more through the physics and the engineering side  
956 more ... and understand the process, understand the process and concepts  
957 of work going on, and then take that and apply that to then figure out  
958 what the math is supposed to be. Not necessarily going through it and  
959 memorizing. Okay. This is a big long nasty equation. You know because  
960 now I have to remember what goes where, I have to remember what  
961 everything is and all that other stuff. Yeah. Yeah. I have trouble

962 memorizing things, so I tend to go more on the side of how does his  
963 work and then I just figure it out from there.  
964  
965 I: Okay.  
966  
967 S: I don't know if that's what other students do but ...  
968  
969 I: Sure  
970  
971 S: Well they can do a what works for them, I do what works for me.  
972  
973 I: Do you like if ... like you feel... feel Like you learn more from a class  
974 you put more effort into?  
975  
976 S: To a point. Uh, and (mumbling/grunting) yeah. I mean it really ... it  
977 really gonna depend on the professor and how the class is run. Because  
978 there's some classes that you will learn more ... more effort put in. There  
979 are also classes that just have well like busy work uh, or stuff like that  
980 you know (mumbling/grunting)... mechanics materials okay we're gonna  
981 spend an entire hour lecture deriving a simple equation with A times B  
982 over, you know, over X. Okay. Now here's ... okay now here's 16  
983 problems to make sure you understand this. Am I really getting any  
984 more ... uh, more knowledge out of doing 16 versus you know two or  
985 three for something that simple, and so for something like that, you run  
986 into diminishing returns as far as, well, spending all this time on just one  
987 thing that I already know and so ... well couldn't I be using that time to  
988 be reviewing other things? Uh, yeah. And so it kind of I don't know, it  
989 kind of gets in hand as far as the whole time deal as far as effort takes  
990 time. And you've only got so much of each. So where do you allocate it?  
991  
992 I: Okay. Do you feel like you typically put more or less time into classes

993 compared to your classmates?

994

995 S: Per the classmates, probably less. Um, I don't know ... how much less,  
996 it, it really depends on, depends on the class, depends on who I'm talking  
997 to, plus other factors. Um, and so the average and for the less um,  
998 (mumbling/grunting) and so the other thing which has to do with um, the  
999 case of my background as far as I grew up in a technical family, and I  
1000 did robotics in high school uh, and I'm on course fell and stuff. I've been  
1001 through a engineering process multiple times and I've seen a lot of stuff,  
1002 um, you know so, so if something is presented you know in class, I'm  
1003 already kind of familiar with the concept of what they're doing. They're  
1004 just putting numbers on it, uh, and so then at that point, I will then take  
1005 my prior knowledge and put numbers on it ... you know you wanna do  
1006 the homework versus you know today the classmates, maybe super-  
1007 confused and trying to ... remember the massive equation. And what  
1008 goes where and anything else you know obviously I go all of this ...  
1009 somebody takes this and multiply it by that and multiply it by this other  
1010 thing and that's your draw bar horsepower or whatever. You know and  
1011 so because of that, I usually end up putting less time in, because I'm not  
1012 trying to do all that memorization. I just figure out the concept and apply  
1013 it.

1014

1015 I: Okay. Uh, think about a subject or a class you actually had to put in  
1016 uh, at least you have to put in more than usual to succeed and just tell  
1017 me about it.

1018

1019 S: Hmm ... hmm. Let's see ... I think that would have been Machine  
1020 design 1. First year our new professor, for like the first semester of that...  
1021 so other than material itself where it like carried over from mechanics  
1022 and materials but ... the way it was taught was not exactly the easiest to  
1023 learn. Uh ... so for the first month or so ... it was just rehashing



1024 mechanics material it was like okay, yeah get on with it.  
1025 (mumbling/grunting) and all that kind of stuff. We were all like, "Okay.  
1026 Hang on. What, what's going on?" I don't know. And so in that case had  
1027 to get a lecture ... get what I could out of the lecture and then take the ...  
1028 and then essentially take the pieces and parts that I got from the lecture,  
1029 carry the book after class and then I don't know, kind of redo that and  
1030 say okay, okay, I remember talking about that and this, this has some  
1031 relation to this other thing, and I flipped the pages there, you know. But  
1032 wait that goes there and this sort of thing plugs here. Okay that's how  
1033 that works. Uh ... yeah. Yeah. But most of my classes I can usually uh,  
1034 you know uh check examples of stuff that they do you know right, uh,  
1035 yeah ... but most of my classes, I can uh, you know uh, check examples  
1036 and stuff that they do and you know in the lecture portion, I can usually  
1037 take that apply that to whatever I'm trying to do on home works or tests.  
1038 Um, but classes where maybe the lecture isn't so clear, that's when I  
1039 have to, you know, put that extra effort in and say okay, you know, he  
1040 mentioned all these four things and how they're ... and how they're all  
1041 connected, but he didn't say how they were connected. They just said  
1042 these things cross reference each other and well, how the heck does that  
1043 work?

1044

1045 I: Mm-hmm (affirmative).

1046

1047 S: That's when I had to go in the book and find all of these things and  
1048 then find how they are all related to each other, and then you can go  
1049 through it, and that's the missing link. How do you get to ... how do you  
1050 get from inputs to outputs?

1051

1052 I: Okay. How did you fill about needing to put more effort into that  
1053 class?

1054

1055 S: I, I mean I ... I didn't really like it. You know ... because I had you  
1056 know um, I had this thing (mumbling/grunting) okay. We've all had you  
1057 know some really professors and not so good professors. Um, So I felt  
1058 that, from the onset, I kind of felt that the class was being made harder  
1059 than it should have been.

1060

1061 I: Okay.

1062

1063 S: Because the professor wasn't quite able to communicate effectively to  
1064 the group or to the class. And there's a fair amount of people who just  
1065 stopped coming to class and you know and just did the homework and  
1066 turned it in and left because they didn't feel it was worth the time to  
1067 actually stay to ... I don't know to listen to the professor if you could just  
1068 read the book and figure it out that way. And maybe for them that  
1069 works. I didn't pick up things from the lecture fairly well, so I always try  
1070 to go to all of my classes because of that.

1071

1072 I: Mm-hmm (affirmative).

1073

1074 S: So if I go to class, I'm going to get a lot more out of that than I will  
1075 out of sitting and reading a book for an hour. Okay. So for me, that's a  
1076 more ... that's a more efficient way for me to learn.

1077

1078 I: Okay. What did you get out of that experience?

1079

1080 S: Um, hmm, hmm (mumbling/grunting). Well, honestly the important  
1081 thing was I did ... I did get a decent grade in class so that's good. Um,  
1082 but essentially, I got the ... I can you know take bits and pieces and go to  
1083 the book and put them together and figure things out. I also got to see ...  
1084 got to see the effects of poor communication. Uh, because I have been in  
1085 some lecture halls where I've had to address and manage of group of

1086 people that are trying to do something. Uh, you know, so to go through  
1087 all these classes and seeing all the good professors and the bad  
1088 professors and kind of the habits that makes each, and what makes them  
1089 good or bad. I'm sure it helped shape uh, how I uh, we approach people,  
1090 I guess so that makes sense. I try to avoid the bad habits and I try to ... I  
1091 try to kind of copy and reuse the good habits of that team. You know to  
1092 try to, you know, make the communication process the most efficient as  
1093 possible because that's just better for everybody evolved.

1094

1095 I: Okay. Now think about another class or subject in which you were  
1096 able to succeed with very little effort at all and just tell me about that.

1097

1098 S: It was a class that I was very interested in uh, to start with, and so  
1099 because of that I was able to just you know, sit there and listen to the  
1100 professor talking and listen to him doing ... listen to what he's explaining  
1101 on the board and why. And because that's something I'm interested in, I  
1102 r- I retained that knowledge a lot better.

1103

1104 I: Mm-hmm (affirmative).

1105

1106 S: So at that point, with classes like that something I don't even have to  
1107 go back to my notes, I just sit down and I guess, I just sit down and say  
1108 okay, problems like this. Okay. I say like, okay, you know well you  
1109 know that's part A, that's part B, that's part C. You just pick it up and go  
1110 through it, because I've seen it and I retained it because I ... because of  
1111 you know ... because I picked that as something that would be useful.

1112

1113 I: Sorry, I just noticed the pen started running low on battery.

1114

1115 S: Yeah.

1116

1117 I: Um, how did you feel about not needing to put so much effort into it?

1118

1119 S: I mean ... you know ... my ... I didn't really think of it much of the  
1120 time. I'm just gonna go hey this is gonna ... here's this class that I don't  
1121 have to put much effort in ... I'm gonna put ... I'm gonna do what I can  
1122 for it, and ... I don't know get that up ... up to a comfortable A, you know  
1123 and just kind of keep it there so I can put that time and effort in classes  
1124 that may need it more.

1125

1126 I: Okay. What did you get out of that experience?

1127

1128 S: Um, allocation of resources I guess, as part of saying, "Okay, well  
1129 you know this needs to go. I, I can get away with less effort in this class,  
1130 I'm gonna take that extra and put it towards something else."

1131

1132 I: Okay. Now think about a student you know who puts in a lot of effort  
1133 to succeed. They do succeed, but they have to work their butts off to do  
1134 it. What does that tell you about how smart they are?

1135

1136 S: I think ... yeah. They maybe a little bit lower on the scale than I am in  
1137 that particular class, but that doesn't mean that it's not gonna be a reverse  
1138 in some other class and yeah.

1139

1140 I: Okay. Well then think about another student you know who doesn't  
1141 need to put effort, much effort but succeeds anyway. Uh, what does that  
1142 tell you about how smart they are?

1143

1144 S: They're obviously good at retaining the material and they just suck it  
1145 up and do it. Kind of like (mumbling/grunting) I do that in some classes  
1146 and other people do it in others. Just kind of you know, whatever you're  
1147 interested in, what's ... what you're good at, and everybody is good at

1148 different things.  
1149  
1150 I: Okay. Now tell me about a specific time that you received feedback  
1151 that you weren't performing to expectation.  
1152  
1153 S: Hmm. (mumbling/grunting) I don't know. (mumbling/grunting) I  
1154 generally try to keep that from happening. Uh, yeah ... there's nothing  
1155 really jumping out at me.  
1156  
1157 I: Well in that case, just hypothetically think of it and tell me, how  
1158 would you respond?  
1159  
1160 S: Figure out what I don't understand, and try to understand it. Uh-  
1161  
1162 I: Okay. So just try to figure out how to do better?  
1163  
1164 S: Yeah. Yeah. Yeah. I guess. And just try to figure out okay, what am I  
1165 doing wrong what do I need to get better at to be ... to perform as  
1166 expected.  
1167  
1168 I: Okay. Do you think you would learn anything from that experience?  
1169  
1170 S: I mean, I would learn the, the stuff that I needed to learn to succeed.  
1171  
1172 I: Mm-hmm (affirmative).  
1173  
1174 S: But I'm not sure I would necessarily learn any like larger big picture  
1175 lesson from that.  
1176  
1177 I: Okay. If you found someone else who was struggling with the  
1178 knowledge that they weren't performing to expectation, what advice

1179 would you give them?  
1180  
1181 S: I don't know. I don't know. It's okay to study, because, the class that  
1182 we're in in engineering school, that's kind of par for the course, that's  
1183 something that... you know ... some people need to do it more than  
1184 others, but everybody has to do at least some ...  
1185  
1186 I: Sure ...  
1187  
1188 S: So you guys just need to figure out what level you need and go with  
1189 it.  
1190  
1191 I: Okay. Now do you care if your peers judge you when you do poorly?  
1192  
1193 S: Yeah. A little bit, but I don't know a ton of people in my classes. Uh,  
1194 they don't really know me so all together I'm just kind of a face in the  
1195 crowd.  
1196  
1197 I: Okay. What about your professors?  
1198  
1199 S: Mm ... yeah ... I mean once again, grades are as objective as possible  
1200 at least in sciences like this and so essentially it's mainly just about can I  
1201 make a certain number essentially...  
1202  
1203 I: Okay. So do you think that you would learn more from an experience  
1204 that's challenging or not very challenging?  
1205  
1206 S: Learn more like in a challenge in class versus a non challenging  
1207 class? Like just a class material? Or...  
1208  
1209 I: A class, a project, anything.

1210  
1211 S: (mumbling/grunting) Okay. Are we talking about the specific material  
1212 covered in that class or project or like-  
1213  
1214 I: Sure.  
1215  
1216 S: Larger like you know I can over come adversity or stuff like that.  
1217  
1218 I: Let's just think the specific. It's easier to wrap your mind around.  
1219  
1220 S: Okay. Okay. Specific class, I'll probably learn more out of an easier  
1221 class because I'm not destructed with trying to wrap my head around the  
1222 complicated mechanisms that go into making whatever happened. I'm  
1223 just worried about okay, how does this work? This is why, but I don't  
1224 necessarily need to be able to do the triple substitution integral and be  
1225 able to go and figure this out. (mumbling/grunting) I need to learn how  
1226 the ... how whatever mechanism works, not necessarily, because too  
1227 wrapped up in the other stuff.  
1228  
1229 I: Okay. Does it matter if you succeed during an experience that you're  
1230 learning from?  
1231  
1232 S: Mm ... I mean it depends on experience, uh, I mean and ... obviously  
1233 you're you wanna ... you wanna succeed when you're learning something  
1234 ... when you learn something, but if you don't, then you can always take  
1235 what you learn and apply that you know-  
1236  
1237 I: Somewhere else?  
1238  
1239 S: You can put it somewhere else, or if it's a required class, and you can  
1240 take that and apply that the next time you take the class.

1241  
1242 I: Okay.  
1243  
1244 S: Uh, so you may not succeed right then, yeah, once again, that just  
1245 kind of builds up a knowledge bank.  
1246  
1247 I: Okay.  
1248  
1249 S: So it helps you succeed later.  
1250  
1251 I: All right. So now that we've talked through all these ideas related to  
1252 motivation and effort and challenges-  
1253  
1254 S: Mm-hmm (affirmative).  
1255  
1256 I: How do you summarize what you shared with me?  
1257  
1258 S: (mumbling/grunting) I just kind of fly by the seat of my pants. And  
1259 yeah. (mumbling/grunting) I just do what works for me. I don't  
1260 necessarily ... you know try to go to seek out good study habits, or I  
1261 don't know, or seek out the best schedule for how to things. I just kind of  
1262 try stuff and see what works, and you know, and I take what works and  
1263 keep doing it.  
1264  
1265 I: Okay. Did you gain any insights from our discussion?  
1266  
1267 S: Not really.  
1268  
1269 I: Okay. Thank you.



1     **Interview Transcript 10: Janice**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/18/2018

4     Transcribed by: Rev.com

5

6     Interviewer: Our goal today is for us to have a detailed discussion about  
7     your beliefs about, or perceptions of the nature of your intelligence. The  
8     discussion will inform my understanding of the perceptions of  
9     engineering students, and will help future decisions about the  
10    undergraduate engineering experience, and how we can try to improve it  
11    for all students. I want to hear your own thoughts and perceptions, I'm  
12    expecting that i- it's not going to be the same as anyone else. So there's  
13    no right or wrong answer, just feel free to tell me what you think. I am to  
14    understand your perspective, so I'll ask questions like, "What do you  
15    mean by that?" And, "Can you elaborate?" These types of questions can  
16    end up being a bit awkward, just because they require you to really  
17    introspect, and think on your experiences, and so I'm going to give you a  
18    nice long time to answer, and if you need any clarification let me know,  
19    take your time, et cetera.

20

21    Student: Okay.

22

23    I: Any questions?

24

25    S: Um, no, I don't think so.

26

27    I: All right. So, tell me about yourself as a student.

28

29    S: Um, I would describe myself as kind of like an overachiever in high  
30    school. I would always try to take the hardest classes possible, um, not  
31    always like because I wanted to take them, but because of my own pride.

32 Um, so I definitely feel like I took some of that to college. I study a lot, I  
33 do well in my classes, at least like I try to always, so.

34

35 I: Okay. So, you describe yourself as an overachiever, what to you i-  
36 does an overachiever do?

37

38 S: Um, probably I guess like more than just the bare minimum. Um, I'm  
39 also like a really competitive person, so like that's where like my own  
40 pride like comes in, it's like I almost like want to be the best, so I like try  
41 to like take the hardest classes, uh, you know... trying to do well.

42

43 I: Okay. What does it mean to you to do well?

44

45 S: To do well to me (laughs) is to get an A, which I know isn't always  
46 the best definition of doing well, and I'm learning that this semester, but  
47 ...

48

49 I: Okay, so you describe yourself as competitive, what does that mean to  
50 you?

51

52 S: Um, well in things I care about, I get really competitive. Um, I don't  
53 know exactly, like just like comparing myself to other people, and then  
54 like deciding if I'm doing better or worse than them I guess, does that  
55 makes sense?

56

57 I: Sure.

58

59 S: Okay.

60

61 I: And then, you ... you talked about your pride, can you just elaborate  
62 on that a bit?

63

64 S: Um, I mean that's just like me, like being prideful to me is just like,  
65 because I want to be the best for only like my own selfishness, like not  
66 because ... like it's not like anyone has ever put it on me, like my parents  
67 have never made me get certain grades, they have never expected me to  
68 meet you know certain things, it's like all myself, like putting out, like I  
69 have to get this grade, or I have to do this, I have to be the best, so I'd  
70 say that's like all my pride, because no one else does like put it on me to  
71 do that.

72

73 I: Okay, you mentioned sort of she- selfishness, what about that makes  
74 you think you're being selfish?

75

76 S: Um, I just, I don't know, because it's for my own gain, and like it's  
77 not, like comparing myself to other people, or like being competitive  
78 and thing, certain things that don't really matter. I feel like it's just like  
79 my own, like it has nothing to do with anyone else and so like just like  
80 being competitive with people who are like you know like almost inside  
81 as me or something, like that's just like me I guess is what I would say.

82

83 I: Okay. What does it mean to you to be the best?

84

85 S: I mean, it definitely ... it just like changes from scenario to scenario I  
86 would say. Um, I would say to be the best in my class is like to have the  
87 highest grade, to you know perform the best on tests, get the best grades.

88

89 I: Okay. Just trying to think if there's anything else to sort of harvest  
90 here. (laughs) Um, so why do you think it's more your pride that drives  
91 you to take hard classes than your wanting to take them?

92

93 S: Um, because, like, so I'm taking honors [class] this semester, this is

94 like the best example I can think of, where honors [class] and like taking  
95 normal [class] would have like no difference in my grade, except I'm  
96 taking like a harder class that meets more often, and like I'm learning  
97 more material at a faster rate, which is like, I mean that's not the reason  
98 ... like I'm not taking it ... like I did not take the class because I was  
99 gonna learn the information better, or I was gonna like learn more, I  
100 took the class like only because it was honors, and like I you know think  
101 that's more like prestigious than just like you know one ... [class], and so  
102 that's why I say like my pride, I see-

103

104 I: Okay.

105

106 S: ... because ...

107

108 I: Is the prestige sort of factor the biggest, or is it the only factor in why  
109 you might take the harder class?

110

111 S: Um, that's not the only factor, I would also like factor in if I think I  
112 could do well in the class, because if I would be taking a hard class that I  
113 know I couldn't perform well in, then I wouldn't take the class, but if I  
114 think I could still like do well in the class, and have like the prestige like  
115 with it too then I would like consider it.

116

117 I: Okay. So let's pretend for a moment that you're in a class, any class,  
118 and you get your exam back, and you look at that exam and feel like  
119 you've succeeded, how do you react?

120

121 S: Um, I mean internally I'm happy, but I don't want to show, oh my  
122 gosh, I don't like to like I don't know help other people with my test  
123 grades, or like um, brag, or like, I usually never tell people my test  
124 scores on anything, because um, number one, like I don't want to come

125 off as like braggy ...  
126  
127 I: Mm-hmm (affirmative).  
128  
129 S: ... if I do well, and then if I do bad then I'm like ashamed and I don't  
130 want to tell anyone. So I try t- try to keep like no emotion.  
131  
132 I: So, you mentioned d- doing well and doing poorly, is there for you  
133 sort of an in-between?  
134  
135 S: Um, I mean, I guess I would say yes, like if I got a B on an exam, or a  
136 high B on an exam, I would piece of it as like an in-between grade.  
137  
138 I: Okay, so it's not really good, but it's not bad either in that case?  
139  
140 S: Yeah.  
141  
142 I: Okay. So, why would you feel happy about your good grade?  
143  
144 S: Um, probably because I would feel like I you know succeeded, if I  
145 did ... because that is like a measurement of your success, like to an  
146 extent, it's like if you mastered the material, if you know the material,  
147 then like I mean a grade is your measurement of your success, so like  
148 work on A or something that would be good, so I'd be happy about that.  
149  
150 I: Okay. What do you consider to be a full-on success on an exam?  
151  
152 S: Like probably 95+.  
153  
154 I: Okay, does a grade g- grade curve, sorry I ... I keep mixing that word  
155 up and saying grave curd ...

156  
157 S: (laughs)  
158  
159 I:... um, I almost did that again. Would a grade curve alter your  
160 perception of what a success on an exam is?  
161  
162 S: Um, yes. If I still ... if I still like received an A, or like ... I mean I'd  
163 still be okay, I'd still be happy if I got an A, but I would still like I don't  
164 think that's like as successful as like getting a 95 or above, but if there's  
165 a grade curve I'd still think that I would be successful if I got an A, I  
166 mean like an A+, because like compared to the other people in my class,  
167 I was still on the top tier.  
168  
169 I: Okay. So, like your perception is the letter grade as a success doesn't  
170 change, but maybe this perception of percent does? Maybe?  
171  
172 S: Yeah.  
173  
174 I: Okay. What if the person sitting next to you in class, you consider  
175 them to be smarter than you are, and you glimpse their score while  
176 they're looking through, or you compare answers or something, and you  
177 find out you did better than they did, how would you react to that?  
178  
179 S: Um, I do- I think it would have to depend on how well I think I did,  
180 like 'cause if I did poorly too on the exam, even though they did like  
181 worse than-  
182  
183 I: Mm-hmm (affirmative).  
184  
185 S: ... me, I would be like, "Hey like we ... I ... like I didn't do well  
186 either." Like we both did bad, but like I don't share my test scores with

187 people, so like I wouldn't tell them what I got, and like if I did like well,  
188 then I definitely wouldn't tell them my score, and I don't know, I would  
189 try to comfort them as much as I could, if they were my friend.  
190  
191 I: Mm-hmm (affirmative). Uh, would that answer change any if like they  
192 got a 98, and you got a 99?  
193  
194 S: No. I would still be really happy with my score if I got that high of a  
195 score.  
196  
197 I: Sure, and w- would the fact that they did less uh, make you any  
198 happier or would it just be, "Yeah cool."?  
199  
200 S: Um, I mean, this is gonna sound petty, but like I think it would have  
201 to depend on if I was like friends with them or not, 'cause if I was  
202 friends with them then I would obviously want my friend to do well, and  
203 that's still a really good grade on the test, I'd be like happy for them, but  
204 like I guess if it was someone maybe I wasn't quite friends with, or we  
205 like butt heads or something like that, if I was like competing with them  
206 like ...  
207  
208 I: Sure.  
209  
210 S: ... then maybe that would make me feel happy, but I don't really know  
211 ...  
212  
213 I: All right.  
214  
215 S: ... in that situation.  
216  
217 I: Fair enough. So, would you share with anyone else that you did better

218 than that person on the exam?

219

220 S: Maybe my mom. I really don't like to share my test scores with  
221 people, it's just ... it's like internal conflict thing with myself, I just, it's  
222 just nothing I don't like to do.

223

224 I: So, you mentioned that if you got a good grade, you wouldn't want to  
225 seem boastful, would ... w- why don't you want to seem boastful?

226

227 S: Because I like telling, like contact with people who I feel like who  
228 are, and it's just I don't know, I judge them because I'm like that's really  
229 annoying that, I guess like if people like ask you what you do, like,  
230 "Hey, how did you do on the test?" And if they're asking you, and they  
231 already did well, then it's like they're just trying to brag about how they  
232 did well, I don't know, that's just how it works in my mind.

233

234 I: Okay. Do you never think that maybe they're just trying to drag as  
235 many people in to celebrate as they can, like not, "I ... hey, celebrate me  
236 I did better than you." But, "Hey, you did too, we should party."?

237 (laughs)

238

239 S: I mean, not really.

240

241 I: Okay, and then you mentioned if you got a low score you wouldn't  
242 want to talk about it, because you'd be embarrassed?

243

244 S: Yeah, more like self-conscious, yeah.

245

246 I: Why would it be that much embarrassing for you?

247

248 S: Because how I like ... how I basically put like, okay I just said like



249 seven times, I'm so sorry. (laughs)  
250  
251 I: It's fine.  
252  
253 S: Uh, um, I equate my grades so much to me as a person, um, like my  
254 self-worth, and all that, which is really bad, I know, but I just think if I  
255 get a bad grade, then that just m- makes me feel like I did like bad as a  
256 person, so I guess it's just embarrassing, especially like when I know  
257 other people did way better than me, like kind of sucks to be like the  
258 low, like get the lowest score.  
259  
260 I: Okay. So, let's say hypothetically another test and you don't feel like  
261 you've succeeded on this exam, how do you react to that?  
262  
263 S: Um, probably I would cry, and call my mom, but I would let people  
264 know that I didn't do well, but I don't really want to like talk about it to  
265 anyone except for my mom.  
266  
267 I: Okay. So, why would you let people know that you didn't do well?  
268  
269 S: Because if I'm in a bad mood, or like if I don't seem okay, like it ...  
270 that's why I'm not okay.  
271  
272 I: Okay, so like more about you didn't do anything wrong, I'm upset  
273 about something else sort of thing?  
274  
275 S: Yeah, yeah.  
276  
277 I: Okay, that makes sense. So why would you uh, why would you be  
278 upset enough to cry about it?  
279

280 S: Because how uh, grades are so important to me, and now they kind of  
281 just, you know, I don't know how to explain it I guess, but they're ...  
282 they're just like so important to me, and if I would, how I like equate  
283 them to my self-worth, then that just makes me feel bad, worthless I  
284 guess kind of.

285

286 I: Okay. So, what if the other students in the class, like the professor  
287 sows ... shows you a box-and-whisker plot or something, and you were  
288 on the low end of that whisker, what ... how would you react to that?

289

290 S: I mean, I ... I feel like if I was on the low end, I already knew I was  
291 there, and so I probably wouldn't be surprised, but I again probably  
292 would not tell anyone that, and just keep that internal.

293

294 I: Okay. Let's say you got like a 50% or something, would you still feel  
295 that that wasn't a success if you found out that the highest grade in the  
296 class was like 53?

297

298 S: No. I would think that would be okay, like if everyone was doing that  
299 in comparison then like I would think it was.

300

301 I: Okay. [squeak] Sorry, hiccup. So, what if somebody in your class that  
302 you didn't think of as being as smart as you are did better on you bet-  
303 better on the exam than you did?

304

305 S: Um, I would probably like wonder if they were studying more than I  
306 did, or if they were like going to a tutor, or doing extra help and I would  
307 trying to see what they were doing too.

308

309 I: Do you think you'd try to mimic whatever they were doing to prepare?

310

311 S: Probably yeah.  
312  
313 I: Okay. Does it matter to you if your peers think you're smart?  
314  
315 S: Um, I don't want to like come off as like not smart, but I don't want to  
316 come off as like ... like a genius, because I know I'm not. So like I just  
317 kind of want to be like average.  
318  
319 I: Okay. So w- why wouldn't you want to come off as not smart?  
320  
321 S: Um, I don't because I feel like I, you know, the prestige I take like  
322 prestigious classes and they do stuff like that, so I would like consider  
323 myself smart ... smarter than I don't know not smart.  
324  
325 I: Reasonably smart?  
326  
327 S: Reasonably sa- yeah.  
328  
329 I: Okay, and why wouldn't you want to come off as a genius?  
330  
331 S: Because I know I'm not, and like that's just like being boastful and-  
332  
333 I: Pretentious.  
334  
335 S: ... pretentious, yeah.  
336  
337 I: Okay, so you in ... in a sense you don't want to live a lie?  
338  
339 S: Yeah.  
340  
341 I: Okay. How about, d- does it matter if your professors think you're

342 smart?

343

344 S: Um, I mean I don't think it really matters to me what they think,  
345 because my test grade must show I guess what.

346

347 I: Okay, and then, just of course let's pretend they do dis- decide whether  
348 you're smart or not based on your test grade, do you care?

349

350 S: Um, no, not really, because like a- I guess that depends on like what  
351 type of class it's in, because like if it's like a big lecture class, you know,  
352 I feel like professors don't really think... Too hard about each individual  
353 student.

354

355 I: Fair enough. Uh, do you care more than if it's a smaller class?

356

357 S: If it's a smaller class, where you actually have like one-on-one  
358 interaction with the professor, then probably I would like to appear you  
359 know like in the middle of the pack.

360

361 I: Okay. So uh, if you are in a big lecture class, ab- about where do you  
362 tend to sit in the lecture hall during classes?

363

364 S: Like first to third row.

365

366 I: Okay. Do you think the teacher's more likely to recognize the students  
367 who sit in those first three rows?

368

369 S: No, I honestly don't think so. I think it's just easier to see the board in  
370 here, so.

371

372 I: Sure, okay. So no. What motivates you to keep pursuing a degree in

373 engineering?

374

375 S: Um, because it's really what I want to do. Like, I don't know, I just  
376 know like I want to be able to work, I want to like work in the medical  
377 field, biomedical engineering, there's like so many different applications,  
378 and I don't know exactly what I want to do yet, but like I know that one  
379 of the applications is what I want to do, and like I also have the potential  
380 to go on to graduate school, or med school, preschool so.

381

382 I: Okay, so, and you mentioned just it's what you want to do, what  
383 exactly is it you want to do?

384

385 S: I want to work in the medical field, that's ... that's as conclusive as I  
386 can do-

387

388 I: (laughs)

389

390 S: ... not know right now.

391

392 I: Yeah, so you don't know whether you want to like work with patients,  
393 or work with technology?

394

395 S: Um, yeah, I don't know. I really don't know right now, so it's a good  
396 question, but I really in- interested in like different like implants that are  
397 used in the body, or like different technologies like that go inside the  
398 body, I want to be-

399

400 I: Like pacemakers?

401

402 S: Pacemakers. Like stuff that would be used that would go inside, all  
403 those different like devices um, interest me, or possibly going on to

404 more school, to work more with patients.  
405  
406 I: Okay, so why does that motivate you?  
407  
408 S: Um ...  
409  
410 I: I'm asking the hard questions, I know. (laughs)  
411  
412 S: Yeah. I ... 'cause that's just what I feel like I wanted, you know? I  
413 don't know. Um, is there any way you could like reword that to me?  
414  
415 I: So, maybe ... how about let's start with what about the medical field  
416 interests you? Like w- why do you want to go and do that?  
417  
418 S: Um, okay, it's because the human body is so intricate, and so cool,  
419 and there's so many different applications, like, and then I don't know  
420 there's so many people who need help with all different types of things,  
421 and if there's like a device that could, like one medical device that could  
422 change the lives of like thousands of people, I think that's ...  
423  
424 I: Like the pacemaker?  
425  
426 S: Yeah, exactly. That's just like amazing that you know someone could  
427 come up with that, and then impact so many people's lives for the better.  
428  
429 I: Okay. Now, let's say you're making a pie chart, and the ... it's what  
430 motivates you to sit down and study, and just do studenty things, what  
431 percent would you say that you're motivated by your grades versus by  
432 your desire to learn?  
433  
434 S: Grades are much higher than just wanting to learn, but I would say

435 probably like 80/20, but that depends on what subject we're talking  
436 about, because obviously the subjects that interest me, I want to learn  
437 about more and I'm like more excited to learn about, and I will spend  
438 more time studying for them, even though I feel like I knew the material  
439 more, but because it's like more interesting than other classes that I don't  
440 particularly like.

441

442 I: Okay, so would 80/20 be for a class that you don't really like, or-

443

444 S: Don't like.

445

446 I:... for a class that you just don't ...

447

448 S: I ... that would be for a class that I don't really like.

449

450 I: Okay, so what would you say it would be for a class that you do really  
451 like?

452

453 S: Um, closer to 50/50. Hmm, maybe in some instances if it was a class I  
454 really liked, like 60/40.

455

456 I: Uh, 60/40 which way?

457

458 S: Oh, 60/40 would be 60 more to learn and-

459

460 I: Okay.

461

462 S: ... 40 would be the grade.

463

464 I: Okay. So w- why do you feel that's where the distribution falls?

465

466 S: For me, I think ... because when I'm ... when I like what I'm learning,  
467 I'm ... when I'm more interested in it, I'm gonna put more time in it  
468 because it's more enjoyable ...

469

470 I: Mm-hmm (affirmative).

471

472 S: ... because like that's what I want to do, and then this class I don't like,  
473 it's like a chore, just study for it, and so I'm only going to study for it  
474 because I know my grade is attached to it, I'm not studying for it because  
475 I like particularly want to learn, but I do want to learn it so I can do well  
476 in the exams.

477

478 I: Sure, okay. So, in what ways are your grades important to you?

479

480 S: Um, I think that my grades are pretty much tied to my self-worth kind  
481 of, and I really think honestly my grades are kind of a measurement of  
482 how successful you are in class, so you know it's a measure of success.

483

484 I: Okay. In what ways is learning important to you then?

485

486 S: Um, so like you can't you know you can't like do anything. Like I  
487 can't ... I can't just say that I want to make a pacemaker if I don't know  
488 how to like, you know, if I don't have the skillsets I need to like make  
489 something, so like to get to like my goal of like getting the degree, and  
490 like doing stuff like that, I have to learn ... I have to like have the skillset  
491 to actually do stuff.

492

493 I: Okay. So, let's pretend for a moment that you're enrolling the classes  
494 for next semester, and there's a class that you need to take, it might be  
495 like actually in your major, it ... it might be something that's more of a  
496 elective to fill K-State 8, but there's two different sections, and they both



497 fit with your schedule, but they're taught by different professors, and you  
498 know these professors both by reputation if not actually know them, and  
499 professor A, you're likely to struggle to keep your grade up in that class,  
500 but you will most likely come out having learned a lot, and learned it  
501 well, and professor B, you're more likely to have zero problem with your  
502 grades, but you just might not learn as much in that class, which one  
503 would you enroll in?

504

505 I: I would probably enroll with Professor B, um, unless advised  
506 otherwise by someone that I really trust, like my brother, he's a senior in  
507 engineering, and unless he would strongly, strongly say take professor  
508 A, then I would probably take professor B.

509

510 I: Okay.

511

512 S: Or i- someone else that is important to you that's-

513

514 I: Right.

515

516 S: ... directing me.

517

518 I: I- someone that you feel knows what they're talking about ...

519

520 S: Mm-hmm (affirmative).

521

522 I:... and has your best interest in mind?

523

524 S: Mm-hmm (affirmative).

525

526 I: Okay. So, why would you choose professor B over professor A?

527

528 S: Because, if it's the same credit, the same class, then ... and if I could  
529 like get an A, or y- you know, get a better grade in that class, and I feel  
530 like be more s- successful, even though I may as well not l- learned as  
531 much, um, I don't know and I guess what the class is and like how much  
532 of a building block it would be to my future classes, because I also  
533 wouldn't want to take a class that would make me be way behind in my  
534 upper level classes, so.

535

536 I: Okay. So, are there situations where you might decide professor A on  
537 your own?

538

539 S: Um, I probably would not choose professor A on my own.

540

541 I: Okay. So, tell me about your learning and started ... studying  
542 strategies.

543

544 S: Um, well I go to my lectures and recitations, I have um, I go to  
545 interview sessions, I can make ... I have hmm, this semester I like try to  
546 do a lot of it on my own, and I'm just kind of getting in the ... in the  
547 routine of like going to just ask, I mean just signed up for a tutor, like a  
548 personal tutor, so I would say like I usually do stuff on my own, and like  
549 um, study, get homework done, um, I watch a lot of videos, like  
550 professors or other teachers like teaching classes to like hear it in a  
551 different way if it doesn't make sense to me the first time, but I am now  
552 like kind of getting into the ... like this when you're like getting even  
553 more help than just what I can do one-on-one so far.

554

555 I: Okay. How did you come to use these strategies?

556

557 S: Which ones? All of them?

558

559 I: Just ... yeah, all of them.

560

561 S: Um, well I guess a lot of stuff like in high school I could just do on  
562 my own, so I you know could watch videos, and um, study, and I would  
563 learn stuff on my own, w- well enough, but I can do well in the tests, but  
564 um, I would say like now I know that I need even more help, because  
565 the ... it just goes so much faster in college, it's not that the material is  
566 that hard, um, it's harder, it's just um, as of right now for me, but um, it's  
567 just going really fast so I need ... I know I need to get like actual help  
568 with the stuff.

569

570 I: Okay. How do you feel like these strategies have changed over time?

571

572 S: Well, I definitely just have gone to more like on my own to like more  
573 getting help from other people, from actual people instead of just the  
574 Internet, or videos.

575

576 I: But when do you think that change started taking place?

577

578 S: When I did poorly on my tests.

579

580 I: Was it this year or?

581

582 S: Yes.

583

584 I: Okay. How did you feel about realizing that you needed to study  
585 more?

586

587 S: Um, I mean I kind of felt I was stupid, because everyone had said,  
588 "Oh yeah, go to SAS, go to SAS, go to SAS." And I was like, "Okay."  
589 But I understand what's going on, like I don't really need to, I feel like

590 I'm doing well, did well in all of my homework, assignments, and all,  
591 like everything that we had done, I had done really well on, and so I  
592 thought that I was you know trying, and then (laughs) I did poorly on the  
593 test. So that's when I kind of decided, and so I guess I felt mostly just  
594 annoyed with myself, disappointed at myself that literally everyone had  
595 told me to go, and I still chose not to, because I thought I was doing fine,  
596 you know, I guess that was it.

597

598 I: Okay, so you describe yourself as feeling stupid, annoyed,  
599 disappointed, w- which made you feel more that the low grade on the  
600 test, or the fact that you had disregarded advice given to you before?

601

602 S: I mean, I was mad at myself for getting the low grade on the test, but  
603 I was like more disappointed in myself that I had all these opportunities  
604 to do well, and all these people telling me to use them, take advantage of  
605 them, and I was like just not making time for it, and like didn't like, I  
606 was thinking I could do it all on my own.

607

608 I: Okay. So, in general how much do you feel that you are the ... I  
609 skipped a word sorry, how much effort do you feel that you put into  
610 your classes?

611

612 S: Um, uh, it depends on class to class I think, you know, if I can put in  
613 hmm, small amount of effort and still get a good outcome, then I'm  
614 gonna do that, it's kind of um, efficient or like pragmatic I guess, like if  
615 a class is harder then I'm gonna spend more time on that, but if a class is  
616 easier, and I'm already doing well, I'm not going to spend a lot of time  
617 studying, like I don't have to.

618

619 I: Okay, what does it mean to you to be efficient or pragmatic?

620

621 S: Just using like you know most of my time devoted to classes that are  
622 harder, or I'm not doing this well and ... and then devoting the other like  
623 left over time, or extra time, or ... to other classes.

624

625 I: Okay. Do you feel that you learn more from a class that you have to  
626 put more effort into?

627

628 S: Um, not necessarily, because I feel like if I already am learning, but  
629 the material is just like easier to grasp, then so learning the same.

630

631 I: Okay. What about compared to your peers, do you feel like you put  
632 more or less effort into your classes?

633

634 S: Um, I think, like right now maybe I'm putting less effort into some of  
635 my classes, but if I want to do better in them, I'm gonna have to put in  
636 more effort than ...

637

638 I: Than your peers?

639

640 S: Yeah.

641

642 I: Okay, w- why do you feel that way?

643

644 S: Um, I don't know, I just feel like if I want to do well, I'm gonna have  
645 to work really hard in it.

646

647 I: Okay, why do you feel like you are currently putting in less effort than  
648 your peers?

649

650 S: Um, just because I'm not making time for certain things, like  
651 studying.

652  
653 I: Okay. What do you think that's time management struggles, or?  
654  
655 S: Um, yes, and just, um, I mean I don't know like how detailed you  
656 want me to get, but like I've been really sick like the past, it's basically  
657 since ... I got mono the first week of school, so...  
658  
659 I: I had that last semester.  
660  
661 S: So I've been more like kind of like struggling through that, and I've  
662 gotten in like sick and I've been to Lafene like six times so far.  
663  
664 I: I know, that's ... that's not fun.  
665  
666 S: Yeah. So I ... I think a lot of it is just like me being sick, and like you  
667 know I ... having like sleeping more and like not you know like making  
668 time for studying, and like, and they do like every time I want to go  
669 hang out with friends or something like that, like I just should really be  
670 studying instead of something like that.  
671  
672 I: Okay. Think about a subject or a class that you had to put in a lot for  
673 ... a lot of effort to succeed, you did succeed, but it took basically your  
674 entire butt or whatever ...  
675  
676 S: Mm-hmm (affirmative).  
677  
678 I:... um, describe that to me.  
679  
680 S: Describe what about it?  
681  
682 I: The ... the class, how you felt about it, what it was like to put in so

683 much effort, whatever you want to tell me.

684

685 S: Um, so I took the class last year in high school, uh, a year I have  
686 never been in a physics class before, and everywhere else, I was taking  
687 AP physics, see electricity and magnetism, just same as engineering  
688 physics two.

689

690 I: Sure.

691

692 S: And I have never been in a physics class before, and there were only  
693 ... only eight people crazy enough to take this class in my school, and  
694 everyone else had already taken physics before, so I came into the class  
695 and I felt really behind, and so I had to study like to get to the point a lot  
696 more than like-

697

698 I: Catch up work.

699

700 S: Yeah. So, I mean, I had to put in a lot of hours, but um, I got an A in  
701 the class and I was really happy, so, I mean it felt worth it, like all the  
702 times I had to like come in and get extra help ...

703

704 I: Okay.

705

706 S: ... do that.

707

708 I: So, at the end you felt like everything was worth it, but how did you  
709 feel about having to put so much effort while it was happening?

710

711 S: Um, I mean, I was mostly frustrated with myself that I couldn't  
712 comprehend what was going on, or ... so I think that was, like I was just  
713 like frustrated, maybe annoyed at that like I wasn't as equipped as oth-

714 other people in my class.

715

716 I: Okay. So what did you get out of that experience?

717

718 S: Um, I guess just like you have to put in a lot of time and effort if you

719 want to succeed, especially if you're behind coming into it.

720

721 I: Did those feelings of frustration and annoyance like fade any after you

722 got your A?

723

724 S: I mean, yeah. I wouldn't say that, like now I wouldn't say like that

725 was the worst class I ever took like ... like I enjoyed my teaching, er my

726 teacher was really, really good. Like I ... that's what I tell people, but

727 like during the class, it was kind of horrible.

728

729 I: If you got thrown back in time, would you do it again knowing how it

730 went the first time?

731

732 S: I would, because I definitely think that taking that will help me in

733 college.

734

735 I: Okay.

736

737 S: Because I know I'll have to basically take that class over again, so.

738

739 I: Sure, okay. Now think of a subject or a class or something that you

740 were able to sis- succeed without much effort at all, and tell me about

741 that.

742

743 S: Um, yeah. So, took comp one through a community college last year,

744 and ...



745  
746 I: Uh, the writing class?  
747  
748 S: Yes.  
749  
750 I: Okay.  
751  
752 S: Composition one, yeah, it's like the entry-level English class. Um,  
753 yeah, it was just really easy, and I did not have to put much effort into it  
754 at all, so I did not put much effort into it.  
755  
756 I: Okay. How did you feel about not needing to put in so much effort?  
757  
758 S: Um, it was kind of nice to have a class I didn't have to worry about  
759 um, when I already had a schedule that was really full of other classes  
760 that I really did need to worry about, and like spend my time with. So, it  
761 was kind of like nice to have.  
762  
763 I: Okay. What did you get out of that experience?  
764  
765 S: Um, I would say I got nothing out of that experience, and I ended up  
766 not taking comp two for the community college and (laughs) just taking  
767 the AP class, because it was just, so boring... so yeah, I would say that,  
768 yeah.  
769  
770 I: Okay. Yeah I ... I took the AP classes.  
771  
772 S: Yeah.  
773  
774 I: So, now think about people you know uh, other students preferably,  
775 and think of someone you know who puts in a lot of effort to succeed,

776 like they do succeed, but they're always working their butts off to do it,  
777 what does that tell you about how smart that person is?

778

779 S: I mean, I still think that they're very smart even if they have to work  
780 hard, because they're still successful in the classes they're doing, good  
781 grades regardless of how much they have to study.

782

783 I: Okay. Now, what about a student, somebody you know who succeeds  
784 but without much effort at all, what does that tell you about how smart  
785 they are?

786

787 S: They're really smart, but sometimes they don't have the best work  
788 ethic I'd say...

789

790 I: Okay. If you were like I don't know building yourself a friend,  
791 (laughs) uh, somehow, which one would you pick? The ... the works  
792 hard to succeed, or succeeds without effort?

793

794 S: Works hard, I'm sure because it's ... I have people that I know who do  
795 not know how to study, and I don't think they ever did study, and did  
796 well on every single test they ever took, and it's just frustrating, it's kind  
797 of like frustrating because you're like, "Why can't I be like that?" But  
798 granted they did really well on their tests, they did poorly in a lot of the  
799 classes because they wouldn't turn in homework, or did stuff like that  
800 and they'd rather be with someone who, and like hanging out with  
801 someone who is like encouraging you to do the homework, and like  
802 study for the tests, because I know that that's what I have to do, I can't  
803 just go in a test and get a good grade.

804

805 I: So you'd like someone who encourages you to keep good habits with  
806 them?

807  
808 S: Mm-hmm (affirmative).  
809  
810 I: Okay. Now, tell me about a specific time in your life when you  
811 received feedback that you were not performing to expectation, it doesn't  
812 have to be school but school's fine too.  
813  
814 S: Um, I'm sorry what is that?  
815  
816 I: Like, at some point w- have you ever received feedback that you were  
817 not performing to expectation, maybe in school, work, or relationship?  
818  
819 S: Yes.  
820  
821 I: Then tell me about it.  
822  
823 S: Um, well, I ... we were across the country, and I was on varsity, and  
824 then like my sophomore year I was like not doing well, so then I was not  
825 on vars-  
826  
827 I: Okay.  
828  
829 S: ... a part of varsity team, so.  
830  
831 I: How did you respond to being no longer on the varsity team?  
832  
833 S: Um, I was really sad about it, but um, I mean my mom was kind of  
834 like I feel my mom was pretty like disappointed in me, because she  
835 thought I was just like quitting during my races, like not like actually  
836 like physically quitting, but like just deciding I'm not going to run well  
837 anymore, but um, you know, I was trying, I just wasn't running fast I

838 guess.

839

840 I: Okay, did ... does uh, sorry, scatter brain. Um, do you frequently find  
841 that your m- mom thinks you're not uh, giving your all at something?

842

843 S: Um, I mean I think, sometimes I get scared that like my mom is  
844 gonna be mad at me, or be disappointed in me, or something like that,  
845 but literally she has never done anything to make me think that, and she  
846 tells me that every single time I call her. (laughs) So, I don't ... like I  
847 don't really know why I think that.

848

849 I: So, it's just kind of a fear that you've created for yourself then?

850

851 S: Yeah, and I am n- like it's no reason, and I ... my brother is like very  
852 successful in school, and I'm-

853

854 I: Maybe like you need to hold a lamp-

855

856 S: I need to live up to that, yeah, which everyone tells me is ridiculous,  
857 and that I'm my own person, and ... but I can't help but think it, so.

858

859 I: Okay. So, what did you do when you were taken off of varsity, did  
860 you try to like get faster or w- w- whatever?

861

862 S: Um, yeah. I mean, I still went to the meets, and like I still raced like  
863 just like JV and stuff. Um, well I worked hard, and then that's ... so cross  
864 countries in the fall, and then in the spring I think I ... I like was doing  
865 better, but then last summer I worked like my butt off, and did pretty  
866 well in cross country in the next season.

867

868 I: Okay. Tell me about what it was like in that si- situation to work your

869 butt off?

870

871 S: Um, I mean I almost like obsessed over running, which I don't know  
872 if I ... I don't know, like I basically ran at least five miles a day, and I've  
873 had to get up at like 5:00 AM because it was so hot, and then I would  
874 run a lot of two-a-days. I was running like 40 to 45 miles a week, which  
875 is a lot to do, and like I did that all summer, and then I did really well in  
876 like the beginning meets, because I was still on my like summer training  
877 schedule, but then like m- my coach, I went from running like 40 to 45  
878 miles, to running like 20 to 25 miles a week, which is a lot less, and  
879 there's e- enough time, at least for me I did not have enough time to do  
880 two-a-days once cross country started, and school started, and had all  
881 my classes, and everything on top of each other. So, I kind of didn't do  
882 well, and then I was kind of frustrated that I wasn't doing like as well as  
883 I thought I was going to do, and so then the next summer I did not work  
884 that herd, so.

885

886 I: Okay. What was the outcome of working your butt off?

887

888 S: Um, I did okay, I got my PR that season.

889

890 I: PR?

891

892 S: Uh, personal record.

893

894 I: Okay.

895

896 S: So I got my best time um, that season, and I did pretty well at state,  
897 but I still didn't do amazing or as good as I thought I was going to be,  
898 even when I was putting that much effort, so kind of seemed like a lot of  
899 stress, because I would like stress myself out if I didn't run, or like I

900 didn't meet you know the mileage for the day, and then like the next day  
901 I'd have to run even more. So like my schedule literally revolved around  
902 running, so it kind of seemed pointless if I didn't get like this amazing  
903 outcome that I was expecting to like do uh, uh-

904

905 I: Were you ... were you disappointed then?

906

907 S: Um, yeah.

908

909 I: Okay.

910

911 S: I would say I was disappointed.

912

913 I: So, did you learn anything from that experience?

914

915 S: Um, basically I learned that I ... I thought, I don't know, I kind of  
916 figured that I'm not going to be like this amazing runner (laughs) that I  
917 kind of thought that if I like put in a lot of effort I could be, so I kind of  
918 just pretty much gave up on that and just decided that I was going to run,  
919 but I wasn't going to put in a ton of effort, because even what I did,  
920 didn't like do anything crazy.

921

922 I: Okay. What advice would you give to someone that's dealing with a  
923 similar situation?

924

925 S: Um, honestly, I would just ... I would straight-up lie to them, I would  
926 say if you put in effort, you will see ... well I guess that wouldn't be  
927 lying, because if you put in the effort and it ... it works, then it would be  
928 worth it, but for me I put in that effort, and it didn't really work, but it's  
929 still worth it because now I can look back and see like now I don't have  
930 the ... the what if, like what if I put in ... what if I worked my butt off

931 one summer, could I have like you know won state?  
932  
933 I: So living without that regret sort of?  
934  
935 S: Yeah. So, then you can at least see that you know even if you do put  
936 in effort and it don't ... you don't get your, like the outcome you wish,  
937 you still, you know, so then you don't regret it.  
938  
939 I: Okay. Do you care if your peers judge you when you do poorly?  
940  
941 S: Um, I'd say it would depend on what it is.  
942  
943 I: Um, let's say school.  
944  
945 S: Um, yeah. I would be sad, I guess, that people would think I'm not ..  
946 not smart, or, yeah, I would feel sad about that.  
947  
948 I: Okay, why would you feel sad?  
949  
950 S: Um, 'cause I feel like I am at least average, (laughs) and um, I guess  
951 that's probably it.  
952  
953 I: Okay. Would uh, the answer for this change if you were talking about  
954 running for the school?  
955  
956 S: Um, no, not at this point, because I kind of don't really care about  
957 running anymore than ... than I care about school, so.  
958  
959 I: Okay. What about professors, do you care if they judge you when you  
960 do poorly?  
961

962 S: Um, I mean, I wouldn't want them to like clunk or like give up on me,  
963 like and I'm still coming in for help, and wanting help, I wouldn't want  
964 them to like think that I was just not smart, she won't understand  
965 anyway, so, like I guess, yes.

966

967 I: Okay. So why do you care if your professors judge?

968

969 S: Um, because I still want them to help me, when I need help.

970

971 I: Do you feel that a professor is less likely to help a student that they  
972 uh, see doing poorly?

973

974 S: Um, possibly. Like if they think the student is doing poorly, and  
975 there's nothing that they can do I guess, or like if they think the students  
976 don't wanna grasp the information even if they ... they explained it, they  
977 might not want to...

978

979 I: Okay. Why do you think they might not want to explain to someone  
980 that couldn't grasp it, put it ... do you think it'd be like a waste of their  
981 time, or do ... are they maybe just not really wanting to deal with that?

982

983 S: I don't know, maybe a waste of their time, I don't ... I don't really  
984 know, I haven't really thought.

985

986 I: Do you think it would still be a waste of time if they came in during  
987 office hours, and that's what they've set aside time for?

988

989 S: No, I don't know. I feel like professors will help you if you come, I  
990 feel like you know I don't know, I haven't encountered anyone who  
991 wouldn't help, so.

992



993 I: Okay.  
994  
995 S: Yeah.  
996  
997 I: So, maybe they're not as scary as you thought they were?  
998  
999 S: (laughs) Yeah.  
1000  
1001 I: All right. So, do you think you'll learn more from e- experience that's  
1002 challenging or not very challenging?  
1003  
1004 S: Um, probably challenging, and I ... like some uh, that's something that  
1005 most people would say, 'cause-  
1006  
1007 I: I don't care most people say, I wanna know what you'd say.  
1008  
1009 S: I don't ... but I would just, I don't know, I feel like this is the basic  
1010 answer, but I feel like if it's more challenging, you're going to remember  
1011 it more, because you're gonna remember the time that you spent doing  
1012 this, or how like frustrated it made you when you couldn't figure out  
1013 this, and then like when you finally solve it, like you're ... I feel like you  
1014 get more satisfaction when you do something that's harder, than do  
1015 somethings that's easier. Like, I am more proud of myself for getting an  
1016 A in my physics class, than getting an A in that comp class, that was a  
1017 breeze so.  
1018  
1019 I: Okay. Does it matter to you if you succeed during a challenging  
1020 experience?  
1021  
1022 S: Yes, I would say. Um, I mean it does matter, but I feel like regardless  
1023 you're going to learn something if you do succeed or if you don't

1024 succeed.

1025

1026 I: Okay, well what if it was like a class project where you had to work  
1027 with a group on something that was really, really hard and the professor  
1028 didn't necessarily expect you to complete the project, so much as he just  
1029 wanted you to study it, learn about it, come away with a bunch of  
1030 knowledge, and participate, w- would you still care whether you actually  
1031 succeeded in completing the project?

1032

1033 S: Um, it depends on what he was like grading on, if he was grading on  
1034 like completeness then I would be upset that we couldn't complete it, but  
1035 if it wasn't necessarily graded on completeness, or we could still come  
1036 away with a decent grade, like with what we had, I would do that, yes.

1037

1038 I: Let's say the actual completion is no more than 2% of your grade.

1039

1040 S: Then I would s- still think we succeeded if we learned about it, came  
1041 up with stuff, and like tried our best at coming up with a solution.

1042

1043 I: So, that point would be just did we do everything we could?

1044

1045 S: Yeah.

1046

1047 I: Okay. Now, you told me that you feel like your grades are tied to your  
1048 self-worth, why do you think you've come to that conclusion?

1049

1050 S: Um, because they kind of they are ... they kind of are like a  
1051 measurement of your success, your success in a class, so I don't know,  
1052 and I want to be successful, and ...

1053

1054 I: Okay, who do you think is reading the ruler?

1055  
1056 S: Um, myself (laughs) I guess... That's how I've defined it for myself.  
1057  
1058 I: Okay. Now, now that we've talked through all these different ideas  
1059 related to motivation, and effort, and challenges, how do you summarize  
1060 what you shared with me?  
1061  
1062 S: Um, I would say that my grades are really important to me, and I m- I  
1063 don't know um, I don't know what else, wait can you just repeat the  
1064 question, I'm sorry.  
1065  
1066 I: Just summarize what you've shared with me today.  
1067  
1068 S: Um, so I talked a lot about my grades, and how I think my grades are  
1069 my self-worth, and how when I do well on the test I am happy, and  
1070 when I do poorly I'm sad, but I don't want to tell anyone what I got, or  
1071 do that, and like when I learn, or like when I study, I'm mostly s- like in  
1072 the class that I don't like I'm studying just for the grade and not because I  
1073 want to learn, but then in the class I do like, I will study more because I  
1074 want to learn information.  
1075  
1076 I: Okay. Have you gained any insights during our discussion?  
1077  
1078 S: Yes.  
1079  
1080 I: What ... what do you think you've insighted? (laughs)  
1081  
1082 S: Um, I feel like I've like just come to the conclusion that I care a lot  
1083 about my grades, and I don't really know how I feel about that, and I  
1084 don't know, and that I'm really a competitive person, but I internalize it  
1085 all, so.

1086  
1087 I: Okay. Anything else?  
1088  
1089 S: Um, I don't know, maybe I need a ... to find a different scale for my  
1090 self-worth, and it's ...  
1091  
1092 I: Okay. And then does anything else, insights or not, that you want to  
1093 share with me before we conclude?  
1094  
1095 S: I don't think so.  
1096  
1097 I: All right, thank you very much.  
1098 [Participant returned after interview, feeling that she had more to share]  
1099 S: Okay, so sometimes I wish that I would have already gotten a B or, so  
1100 I don't feel ... because I feel like once you get your first B, or like, you  
1101 break your streak, then it ... basically, how I see a B is I'm gonna be less  
1102 stressed about the actual grade-  
1103  
1104 I: Mm-hmm (affirmative).  
1105  
1106 S: And more focused on, like, performing well. Or, like, you know,  
1107 when the mission like... Doing well but on a different scale, because I'm  
1108 not so focused on the grade. So, that's how I have it in my mind. So, it's  
1109 like I wish I already had gotten that grade, so it's already in the past and  
1110 I don't have to react to it now, but I know it's going to happen soon. But  
1111 I just don't know how I'm gonna react, so, like, I don't want it to happen.  
1112  
1113 I: Okay.  
1114  
1115 S: I don't know. That's how I feel about that.

1116

1117 I: All right.

1     **Interview Transcript 11: Kathleen**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/19/2018

4     Transcribed by: Rev.com

5

6     Interviewer: Our goal today is first to have a detailed discussion about  
7     your beliefs about, or perceptions of the nature of your intelligence. The  
8     discussion will inform my understanding of the perceptions of  
9     engineering students, and will help future decisions about the  
10    undergraduate engineering experience, and how it can be improved for  
11    all students. I want to hear your own thoughts and perceptions, I am  
12    expecting they will be different from the thought of others. There's no  
13    right or wrong answer. I aim to understand your perspectives, so I'll ask  
14    questions like, "What do you mean by that?" These types of questions  
15    can end up being a bit awkward just because they require you to really  
16    introspectively reflect on your experiences. Um, I'm going to leave pa-  
17    purposely long pauses after my questions. Take your time, if you need  
18    clarification let me know. Is there any further questions?

19

20    Student: Nope. I'm sure I'll come up with them as we get on, I'll let you  
21    know.

22

23    I: Sure. And I'll ask you again at the end, so don't worry.

24

25    S: Okay.

26

27    I: So, hmm. Tell me about yourself as a student?

28

29    S: Um, as a student I'm pretty, like, driven. I, like, strive to get, like,  
30    really good grades. And I like, push myself to study a lot, even if I, you  
31    know, I don't really have to, to get a good grade. Um, I just kind of

32 know that like, I won't be like, fulfilling my capabilities if I am- like, if  
33 I'm not trying my best and like, can't do really good things. Um, so I  
34 just- I push myself to get there.

35

36 I: Okay. So you- what does it mean to be a driven student?

37

38 S: Um, I think like, motivated, like, by my own interests. Instead of like,  
39 by a deadline, or by like, an incentive or something, I guess. I guess I  
40 want to- it's like-

41

42 I: Intrinsically motivated?

43

44 S: I guess so, yeah. Like, I want to do well because like, it makes me  
45 happy. Instead of like, it's what others expect me to do. Um, so I guess  
46 like, I'm driven by my own want to succeed, instead of like, what others  
47 expect me to do.

48

49 I: Okay. What to you constitutes good grades?

50

51 S: Um, so in high school it was like, all As.

52

53 I: Mm-hmm (affirmative).

54

55 S: You know, and I would, um, I think in college it's like changed a little  
56 bit. My courses are more difficult. Um, I have to keep a 3.5 GPA for my  
57 scholarship. But right now, I think I have like, all As, and then like, one  
58 B in my, um, Calc class. So, I mean I'm happy with all those. Like, I  
59 know like, my grades are as good as like, I can do. And like, I'm putting  
60 as much work into them as I can. And, trying my best and not taking any  
61 shortcuts or anything. So I'm just happy with whatever success I can get  
62 out of that.

63

64 I: Okay.

65

66 S: So they don't have to be perfect, just you know, the best I can do,  
67 (laughs).

68

69 I: Good. So, you say you study a lot. What to you does studying a lot  
70 mean, as opposed to say, I don't know, studying medium, or a little.

71

72 S: Yeah, (laughs). Um, I think, definitely with like my math class,  
73 studying a lot mean just like, you know, really thoroughly going through  
74 the homework, and making sure I understand what I'm doing, instead of  
75 just like copying it down from someone. Um, and then for, like studying  
76 for tests, I would say like, I probably put in like, 10 to 15 hours before  
77 each test. Um, and so I'd say that's- that's like, a fairly large amount of  
78 time. For my other classes I just like, a lot, like varies, and like the time.  
79 But it's different content, and it's not as like, detailed. So I don't have to  
80 put in as much time. So I think that I'm studying a lot just means like, I  
81 study until I fully understand it, no matter how long that takes.

82

83 I: Okay. And then you mentioned something about fulfilling your  
84 capabilities. Would you tell me about that?

85

86 S: Yeah, um, I mean, since I was like, in grade school, I was in like, the  
87 gifted program. And like the, um IEP plan. So, like individual education  
88 plan. Um, so I know that like, from a young age I was kind of like  
89 picked out as being like, a- a- um, int- intelligent and like, wanting more  
90 challenges. And so that like, I'm, um, capable of, you know like, pushing  
91 myself, and like, achieving a lot. Um, so I feel like if I'm not doing that,  
92 then I'm just kind of like letting myself be average. And I don't really  
93 want to do that, (laughs).



94

95 I: Okay. What does it mean to be average?

96

97 S: Well, I mean not like average as like, a bad thing. That's not what I  
98 meant. I just meant that like, you know, people- different people have  
99 like, different talents. And I think like, you should use those the best you  
100 can. So if I'm, you know, have a large amount of intelligence, then I  
101 should be trying to use that, and trying to um, just utilize that the best I  
102 can.

103

104 I: Okay. So, you- you say, you don't necessarily think it's bad to be  
105 average, but what does that mean, a- average?

106

107 S: Um, I think it looks different for everybody. So like, in school I think  
108 average is, you know, just maybe someone who just doesn't have as  
109 much, like, drive, or vision. So they're just like, okay with um, you  
110 know, passing classes. Instead of like, doing their best. Um, so, I just- I  
111 don't ever want to like fall into the place where I'm not trying me best, I  
112 guess.

113

114 I: Okay. Let's say hypothetically you're in a class, and you get your  
115 exams back. And you look at your exam and feel that you have  
116 succeeded on your exam. How do you react?

117

118 S: Um, I mean, I'm like, usually like, a lot of stress off my shoulders.  
119 Like, I can take a deep breath. Um, I usually put my papers away pretty  
120 quick, I don't just like, let them hang out on my desk for everyone to see.

121

122 I: Okay. So, why do you feel that it's such a big stress of your shoulders?

123

124 S: Um, 'cause I do put like, a lot of work and time into like, studying for

125 things. And so I like to see that I get paid off I guess, and that I got, like,  
126 a grade I was hoping for. So I- then I can kind of feel like, phew. Okay. I  
127 did it this time, I can do again, and like something I did, and how I  
128 studied worked.

129

130 I: Okay. What do you consider to be a success on an exam?

131

132 S: Um, usually I have like a goal in mind before I go into the exam, like,  
133 based on like, how well I feel about the material, or like, how much I'm  
134 understanding it. So, I mean, for my business class, 'cause I'm- 'cause  
135 like I have a business minor. Um, a successful exam would be like, you  
136 know like a A, so like 90 to 100. In like math class, I'm in Calc 3. And I  
137 think a successful grade would be like, an 80 and up, because it's just a  
138 lot more difficult content.

139

140 I: Okay. Do you uh, do you think that a grade curve would change your  
141 perception of what a success is?

142

143 S: Um, I don't really know, 'cause I haven't had any teachers that curved  
144 yet. So I haven't had a lot of experience with like, how that changes my  
145 perspective on grades.

146

147 I: Okay.

148

149 S: Um, so I can- I don't really have a good answer to that one, sorry.

150

151 I: Okay. Do you have maybe a hypothetical, you think this might happen  
152 on that.

153

154 S: Yeah, I mean, my math teacher says he'll like, curve on grades at the  
155 end of the semesters, but it's like, hard to know how much that'll be, and

156 it's a really big class. So I don't know like, how much of a curve it'll be.  
157 So I just, in my head I'm not trying to rely on that. I'm trying to like, see  
158 my grade in canvas, and like, expect that's the highest it's going to be. So  
159 then anything above that will be just an added bonus.

160

161 I: Sure, okay. Let's the person next to you is someone that you consider  
162 to be a smarter person than you are, and you just sort of glimpse the  
163 grade as the tests get handed out, and you did better than they did. How  
164 do you react to that?

165

166 S: Um, we actually had a presentation on this last night, about like, hard  
167 work versus talent. And I think that's what I would just like, kind of  
168 amount it to. Because like, you know maybe I just like studied more, and  
169 I had more time to dedicate to studying for that test, and so I ended up  
170 with a better grade. Maybe they didn't have time to study, and so  
171 something happened, and they just weren't as prepared for it. So I don't  
172 think I'd like, view myself as like, smarter than them. I think just maybe  
173 different way of studying, or different situations.

174

175 I: Okay. So, would you share with anyone else that you did better than  
176 that person?

177

178 S: Hmm, maybe. I don't- I would never say their name. I would just be  
179 like, "Hey, yeah, surprise. This guy who normally helps me with my  
180 homework," like, I'd- I don't know actually, maybe I wouldn't do that. I  
181 think I'd feel uncomfortable with that.

182

183 I: Okay. Um, is there anybody you would rather would share that with  
184 then someone else?

185

186 S: Probably my parents, I tell them like, almost everything. So, I you

187 know, like, I tell them when I do well and stuff. And um, yeah.

188

189 I: Okay. So why might you share with your parents that you did better  
190 than this person?

191

192 S: Uh, 'cause they don't know them at all. So like, if I tell them like, this  
193 person who I view as really smart, like I, um, did just as well as them,  
194 then I'd be like, proud of myself for like, studying, and like, having hard  
195 work like, make up for like, what I might not have in like, their natural  
196 talent. Um so I they are really big on like, hard work, and perseverance,  
197 and so they'd be proud of me for that.

198

199 I: Sure, okay. Why would you feel uncomfortable sharing it with  
200 anybody else?

201

202 S: Um, I've been- I don't want to come off as bragging to like, my  
203 friends of anything. A lot them like, aren't in engineering. And so, even  
204 just like being here is like, it's kind of intimidating to them, 'cause they  
205 know like, how much harder the classes are. So then if I started telling  
206 them that I was like, doing better than the other people in the classes as  
207 well, I just feel like I might just kind of be isolating myself from them.  
208 And they- it just wouldn't come up in a conversation anyway, so I'd have  
209 to make a point to bring up, when it wouldn't really be beneficial  
210 anyone.

211

212 I: Other than just your comparison to someone else, would you share  
213 with anyone that you did well on that test?

214

215 S: Mm-hmm (affirmative), yeah. 'Cause they know I study a lot for  
216 them, and then always followup with me, like, "Hey, let me know how  
217 you did on it, I want to hear," and like, celebrate with me, or take me out

218 for ice cream if it's bad, (laughs).

219

220 I: So why do you feel comfortable sharing your good grades with  
221 people?

222

223 S: Hmm, because if like, I'm sharing my life with them, and all this time  
224 studying, and I'm telling them, "Like, hey I can't hang out because I have  
225 homework to do, or studying," I feel like I should share with them, like,  
226 this is what it paid off for, and this is why I needed to study, 'cause I  
227 needed to get this grade. So I feel like it, um, helps me to explain to  
228 them like, "I really do appreciate your offers, but hey, look what I did  
229 instead." And they'd be happy for me.

230

231 I: It helps you keep your- keep your priorities st- straight without hurting  
232 anyone's feelings.

233

234 S: Exactly, yeah.

235

236 I: Okay. Now let's say hypothetically you got the exam back, but you  
237 don't feel like you really succeeded on it. Um, how would you react?

238

239 S: Um, I think I'd be pretty disappointed. Especially if I like, put a lot of  
240 like, time into studying. And if I feel prepared, like, going into it. I think  
241 I'd be like, kind of surprised that I didn't do as well as I thought I did.  
242 Um, so I'd probably, you know like, take some time and just like, relax  
243 and like, kind of get it out of my head. And then figure out what to do  
244 better next time really changing my approach or something.

245

246 I: Okay. Why would that be the approach you'd take to dealing with  
247 that?

248

249 S: Um, because I think like, if you just try to like, um, I think it's like  
250 important to like, acknowledge that it happened. And like, figure out that  
251 yeah, this kind of sucks. Um, and so, uh, I don't know I don't think like, I  
252 don't want to wallow in it, you know. But I think like, it's important to  
253 take some time to just like, it's okay. Just get your head like, straight  
254 again. And then um, obviously something went wrong if I didn't do as  
255 well as I thought I did, or if it's like a pretty drastic difference. So  
256 figuring out what that was, and how to change it, what to do different  
257 next time.

258

259 I: Okay. What- what do you consider to be not quite a success on an  
260 exam?

261

262 S: Like I said, I usually have like a goal in my head. Like, going into it.  
263 So if I don't hit that goal, then I'd be disappointed. And they're usually  
264 pretty conservative goals. Like, I'm almost 100% confident I can make  
265 it. So if I didn't, something like really went wrong.

266

267 I: Sure. So what if the other students in the class all do better than you  
268 did?

269

270 S: Um, I'd probably go and ask some of them for like, help tutoring. I go  
271 to SAS a lot. But I usually just like, work on my own there. Um, so I'd  
272 probably just start like, reaching out and like, asking other people for  
273 help. Or like, telling them I don't understand, which can be hard to do,  
274 so.

275

276 I: Okay. What if the person on the other side of you, you didn't think  
277 they were as smart of a person as you were. How would you react when  
278 they got a better grade than you did?

279

280 S: Um, probably would think like, they spent more time preparing, you  
281 know. And that they had more motivation than me for some reason. Or,  
282 um, I don't know. It's hard to define smart, since you don't see people  
283 outside of the classroom always, you know. So I have no idea how much  
284 time people spend at home studying for these things, or like, what their-  
285 what their habits are like. So, I think I'd be fairly open to asking  
286 anybody for help, since if we're all in Calc 3 that must mean we're all,  
287 you know, willing to work hard, (laughs), and get through class.

288  
289 I: Sure. Would you share with anyone else that you didn't do as well as  
290 that person that you thought was, well, not as smart as you are?

291  
292 S: Um, probably not. No. I think like, if I was going to compare my  
293 score to anything, I'd probably compare to like, the mean or the average  
294 score on the test that you can see posted. I'd say oh I thought I did well,  
295 but I was below the average on this, so.

296  
297 I: Okay. What about, would you share with anyone else that you didn't  
298 well on that test?

299  
300 S: I would share it with my friends, yeah. Not like, all of them. But just  
301 like, the people with whom I'm super close with, and then who might  
302 like ask me about it. Like I probably wouldn't bring it up unless they  
303 asked me. I'd definitely tell me parents, 'cause they like to hear about  
304 that, (laughs).

305  
306 I: Why would be comfortable sharing your bad test grade with your  
307 friends?

308  
309 S: Um, I mean because you know, it happens to everybody, nobody has  
310 like, a perfect class, or they understand everything, and everything

311 comes super easily. So like, if they know that something is like, difficult  
312 for me, then they might like, understand why I need to spend more time  
313 studying. Or they might, you know, be willing to like, offer resources, or  
314 like, share some of their study ideas.

315

316 I: And help maybe?

317

318 S: Yeah.

319

320 I: Mm-hmm (affirmative). Okay. Does it matter to you if your peers  
321 think you're smart?

322

323 S: Um, I guess. Kind of. But just by like, telling people you're an  
324 engineering student, people kind of assume you're smart. So I don't like,  
325 make it a point to like, go out and prove like, "Hey, look at me. This is  
326 my grades, I'm smart." So.

327

328 I: Okay, why does it matter to you if they think you're smart?

329

330 S: Um, 'cause I think that is one of my talents. And I think that you  
331 know, people should celebrate their talents instead of like, competing all  
332 the time. So I think like, you know, if I know that my friend's really  
333 good at art, and I want to take an interest in her art and support her in  
334 that. So if people think that I'm smart, you know, um, they're going to be  
335 more likely to support me and help me with my struggles and studies.

336

337 I: Okay. Does it matter to if your professors think you're smart?

338

339 S: Um, not as much smart as like, having like, perseverance, and like,  
340 dedication to it. So like, I will ask lots of questions in class. It might not  
341 be like, the most intelligent questions. (laughs) But if I'm like, really



342 struggling with a concept, like, I'm going to ask it. So I can like,  
343 understand it better. But I like, would rather have them know that I'm  
344 willing to work hard and like, put in the time and effort for the class,  
345 rather than like, have it come to me naturally.

346

347 I: So rather than wanting to prove to them that you're smart, you want to  
348 prove to them that you're engaged?

349

350 S: Yes.

351

352 I: Why- why do you want them to know that you're engaged?

353

354 S: Um, I think that says a lot more about you, like your personality and  
355 what kind of like, worker you are. Because if someone has like,  
356 everyone come to them really easily, then they don't really know a lot of  
357 challenges, and so they haven't really had a lot of setbacks. But if you're  
358 engaged, and you're like, asking questions, and like, wanting to learn  
359 more, it shows that you actually have an interest in the subject, and that  
360 you're trying to do your best in it.

361

362 I: Okay. So, tell me about, what is it that motivates you to pursue an  
363 engineering degree?

364

365 S: Um, honestly my dad's an engineer. And so I kind of just like grew up  
366 around it. He's a civil engineer though, and then I took physics in high  
367 school. And I realized I really didn't like physics. So um, I started  
368 looking at different kinds of engineering to see if that would still be like,  
369 an option. Because I really enjoy like, doing math, and like, working on  
370 problems. But um, I didn't really know a lot about like, what you could  
371 do with just like, math. And so I was like, "I don't really want to be a  
372 math teacher." So I just kind of looked at engineering, and um, I like it

373 because it's a lot of other people who are like, really driven and  
374 hardworking, and like, willing to face a lot of challenges to get their  
375 degree. Um, so I guess that's what kind of draws me to it.

376

377 I: Okay. Why does that draw you to engineering?

378

379 S: I think it's like, important to surround yourself with people who have  
380 similar work ethics and goals, because if you're always like surrounded  
381 other people who are just like, going out all the time and not studying, or  
382 skipping class, then it's going, well, that's what you're going to start to  
383 do as well. So if you're around other people who want to do well, and  
384 want to have success and like, be their best, um, then you're going to  
385 want that as well.

386

387 I: Okay. So, let's say I ask you to make a pie chart of your, um, [cough]  
388 excuse me, your- your motivations as you study and try to learn things.  
389 Um, and you're putting your motivation based on grades, and your m-  
390 motivation based on desire to learn the subject on the subject matter on  
391 this pie chart. What would you, uh, divide it out as percent wise?

392

393 S: Um, I think it definitely depends on the class, because like, some of  
394 my classes like, I'm taking and I'm really, really not interested in them,  
395 so I'm definitely just in it for the grade. Um, but other classes, like I  
396 know like, this is information I'm going to like, need to know. And it's  
397 just like, continues to be built on. So I definitely want to like, learn the  
398 subject. So I think for those classes, like it would probably be like, 70%  
399 um, like learning the subject and like, 30% grades. Um, and then for  
400 like, my other classes that I'm not interested in, it would probably be  
401 flipped. So like, 30% interested, and like 70% grade.

402

403 I: Okay. So, why do feel that it's that sort of distribution?

404

405 S: Um, because if I'm a class that I'm not interested in, and I know that  
406 this is not going to relate to my career, like, any other classes or studies  
407 that I'm going to need, I'm not going to be as motivated to learn it. And  
408 like, I like learning, and I like learning new things. But um, at like, the  
409 end of the semester I'm going to want to like, show that I like, have a  
410 good grade, and I understood it, so I don't have to go back and take it  
411 again, (laughs). Um, but for the classes that I will need to learn, and um,  
412 build upon, then I can get like, it's really important that you learn it right  
413 the first time. Instead of like, just getting the good grade, and then, like  
414 having it come back to bite you later when you would've wished you  
415 learned it.

416

417 I: Okay. So, what classes tend to be, uh, 30/70 versus 70/30?

418

419 S: Um, right now um, probably my honors like, [honors course] class,  
420 because you don't learn anything in it You just talk, so much you waste  
421 all the time. And so, I just like do the assignments to get the grade, and I  
422 show up, and I talk in class. But I'm not super interested in like, what the  
423 discussion's about. Um, let's see. What other classes? I think that one,  
424 and like, business class are probably the only two. I might- I- probably  
425 my business class is probably like, 60/40. Like 60% learning and 40%  
426 grade, because the 60- like what we're learning is important, and it's like  
427 very applicable to like, any career I would end up in.

428

429 I: Okay.

430

431 S: But it's also, just a class where anyone's expected to get an A, it's an  
432 easy class. Um, and then like my industrial engineering class, and my  
433 Calc class, and my economics. I know those are all ones that like, I need  
434 to know, and those are going to be relevant to the rest of courses

435 throughout college.

436

437 I: Okay. So what- what ways are your grades important to you?

438

439 S: Honestly, um, most importantly for like, keeping my scholarship

440 because I know if I don't have my scholarships I'm going to be like, way

441 more stressed out about money, and I'm going to have spend time

442 working, and getting a job, which means like, less time for studying, and

443 like, getting good grades.

444

445 I: Certainly.

446

447 S: (laughs), so it's just important for me to like, keep that balance,

448 because there's going to be consequences if I don't.

449

450 I: Right. So in what way is this learning important to you?

451

452 S: Hmm. I think learning is important because like, up until like, this

453 point in life, it's like, all you've done. You know like, that's what your

454 whole life is. Is like, going to school, and learning new content. And

455 like, passing tests. So when you get to college, you actually get to decide

456 like, what you want to learn. I think it should be, sub- subjects that

457 actually interest you. And it shouldn't feel like it's forced anymore. Um,

458 it's like, your choice to you know, study what you want to. So I think it

459 takes on like, a different meaning, when you're learning in college.

460 Because you know, it's stuff that you're going to want to do for the rest

461 of your life. So, I think it's important to me because I want to like, learn

462 about stuff that I'm actually interested in, I don't feel like I'm stuck doing

463 or like, or like, I hate going into work. So I want to find something that

464 I'm passionate about. Stupid as that sounds.

465

466 I: Yep.

467

468 S: (laughs).

469

470 I: That's fine. Um, what kind of thing do you think you might end up

471 being passionate about, as far as work?

472

473 S: Um, I don't know. I think- I think I'll end up liking industrial

474 engineering a lot, because it's about like, making things more efficient.

475 And like, bettering systems that already exist, and I think that I would

476 like be happy doing that, it's like a new problem every time, it's a new

477 situation. Instead of just like, a repetitive job. So I think I'll end up really

478 enjoying that. I just don't know that much about it right now, to

479 definitely say that. I'm still a freshman.

480

481 I: Sure. Okay. Let's pretend for a moment that you're enrolling for a

482 class in the next semesters. And there's a class that you take, it might be

483 math class that you need for your proper major, or it might be a class

484 that you just need for fulfilling K-State 8. But there's two different

485 sections of it, taught by two different teachers and both of them work for

486 your schedule.

487

488 S: Okay.

489

490 I: So, you've heard of those professors, both of them, at least by

491 reputation. And so, professor A, you know that in that class, you're

492 going to come out feeling like you've learned a lot. But you're probably

493 going to have a hard time keeping your grades up, and you're have to,

494 going to have to work your butt off. But professor B is going to be a lot

495 easier to get the grades that everybody wants in that class, but they

496 might just not learn everything quite as thoroughly as professor A.

497 Which one do you enroll in?

498

499 S: Um, I think I'd have to talk to people who have like, maybe taken the  
500 class before, who have had one of the professors, and see like, what their  
501 thoughts on it were. 'Cause I do like, really respect the opinions of other  
502 people who have been in the situation. Um, I think it depends on like,  
503 what kind of course it was. Like if it was one that like, I don't need for  
504 engineering, and it was just one I had to do for K-State 8, I'd probably be  
505 tempted to take the easier one to get the better grade, to keep my GPA  
506 up. Um, but if it's- you know, if it's something that, like a math or  
507 science, or engineering course. I'd probably take the harder professor,  
508 because I know like, my own work ethic, and my own like, like drive for  
509 success means that like, I'm going to put in the extra work to get the  
510 good grade. Um, so, I wouldn't be like, deterred by having a more  
511 intense teacher, because I think I'd get more out of it. And I think like,  
512 they would recognize that I'm like, working hard, and like, respect that.

513

514 I: Okay. So would that be- can you think of a situation that your answer  
515 might change?

516

517 S: Um, maybe if I was like at like a 3.4 GPA, and I needed to get it up to  
518 a 3.5, I'd probably um, just be doing whatever I could to get As in my  
519 classes.

520

521 I: Might you change your decision based on how easy or hard the other  
522 classes you take that you're- you think will be?

523

524 S: Probably, yeah. If I have a lot of hard classes, and I need um, you  
525 know, a class that I don't have to spend as much time on, I'd be tempted  
526 to take the easier one. 'Cause, I don't know. For me it's like really  
527 important to have a balance in my life, where I'm not just doing school

528 all the time.

529

530 I: Definitely, mental health is important.

531

532 S: Yeah, (laughs), exactly. So if I have, like, a super overwhelming  
533 schedule, and I know that like, this is the only class where I might be  
534 able to catch a break in, I'd probably take it.

535

536 I: So, tell me about your strategies for learning and studying?

537

538 S: Um, it depends on the subject. Definitely for math, it's probably like,  
539 the one I spend like, the most time studying. So, like for the- I had a test  
540 last night. Um, I spent just like a lot of time going over like, the  
541 homework. And like, redoing the problems that I had difficulties with.  
542 Um, I do like, crib sheets, where like you make a sheet that has like, all  
543 of your formulas and like, just outlines of the chapter. Those really help  
544 me a lot, because usually as you're like, going through the lectures and  
545 stuff, you don't really know how everything's organized. It just keeps me  
546 like, moving on. So I like things to be like, labeled, and like, sorted and  
547 organized. To see these are the different, like, actual content and like,  
548 formulas we've learned. And then, just a lot of like, practicing. And um,  
549 I usually like try to do the practice test, and I'll get stuck. And my, like,  
550 really big thing is like, instead of like, trying to do it like, without  
551 looking at the answer key, and just like, being stubborn about it; I'd  
552 rather look at the answer key, and figure out how to do it right. Instead  
553 of like, trying to learn it wrong. So, yeah. I just do it over and over  
554 again, and I look up old tests. Um, then for like my economics or  
555 business class, I like flash cards. Um, I like making like a list of  
556 definitions and terms. Um, so, I think it's just being organized and all  
557 that.

558

559 I: Okay. How did you come to use these strategies?

560

561 S: Um, my high school teachers um, would teach different strategies for  
562 studying for their tests in their classrooms. And I just like kind of like  
563 applied them to the classes where they like- I signed up with. It's like,  
564 my math class in high school, we had crib sheet throw downs. Everyone  
565 came to class with a crib sheet, and we'd compete to see who had the  
566 best one. It was like, the most organized, and easy to follow. And it was  
567 a big deal, it was really fun, (laughs).

568

569 I: That does sound fun.

570

571 S: And then flashcards just because they're easy to take with you, and  
572 they're easy to make, and um, study with.

573

574 I: Sure. How have your strategies changed over time?

575

576 S: Um, I think in like, when I was in middle school, and like the  
577 beginning of high school, none of my classes were super challenging, so  
578 I didn't really have to study a lot. So I think like, um, that was the kind  
579 of point in my life where I had to figure out how to study, when I got to  
580 like, my harder classes in like, junior and senior year. So that was  
581 probably a challenge for me then. Was just like realizing like, oh, I can't  
582 just like do the study guide, and expect to do great on the test. I have to  
583 like actually work at this. So that's when I had to start figuring out like, I  
584 need to go find my teacher before and after class, or go to the study  
585 review, and stuff. Um, and like, just finding more opportunities and  
586 resources to understand the material better.

587

588 I: Okay. In general, how much effort do you feel that you put into your  
589 classes?



590

591 S: In my math class I'm at like, 95% effort, or probably like 100% effort,  
592 like, I'm afraid to miss that class because I feel like I'll be like, missing  
593 something.

594

595 I: [sniffing] I might sneeze in a sec.

596

597 S: Oh no, you're totally fine. It's allergy season.

598

599 I: Oh yeah. Maybe it's gone? Maybe? Anyway, continue.

600

601 S: Um, so like my math class it's like 100%. I'm going everything I can  
602 to be successful in that. Um, and then my like business class, probably  
603 like 30 or 40%. Like, I do all the homework on time, do all my  
604 assignments and do everything I'm supposed to do. And I- I put a lot of  
605 effort into it to make sure it's quality work. I just like, don't spend any  
606 extra outside of class studying for it.

607

608 I: Okay, so do you kind of judged that based on whether you go above  
609 and beyond what is needed?

610

611 S: Um, I think just like I'll do as much effort as I feel is necessary to be  
612 prepared for the test so like, um, my business class I will spend a lot of  
613 time studying for it, and like, making those terms and definitions and  
614 like, um. But like, during just like a normal unit, when it's just like  
615 lectures. You know, I'll show up for lectures, and I'll do my homework  
616 and stuff, and I'm not going to spend extra time outside of class like,  
617 reviewing what I just learned. Um, because it's- it doesn't need it. Like, I  
618 understood what happened in class, I don't feel like I need to go over it  
619 again. Versus with like, my math class, um, usually I have to go over it a  
620 couple of times before it actually clicks. So I'll have to do that before I

621 can do the homework or anything.

622

623 I: Okay. Do you feel like you learn more from classes that you have to  
624 put more into- effort into?

625

626 S: Yeah, definitely. (laughs), 'cause like, my first test in business, I  
627 couldn't tell you what was on it right now. Like I understood it at the  
628 time, but I think I was like, memorizing instead of like, learning it. But  
629 my math class, like, you know it just keeps building upon itself. So you  
630 have to be able to understand what you learned at the beginning,  
631 otherwise you'll forget it by the time you get to the next part.

632

633 I: What about compared to your peers? Do you feel like you put more  
634 effort into your classes than your peers do?

635

636 S: Um, like I said, it's hard to know, since you don't see people outside  
637 of class very often. So I have no idea how much they study at home. But  
638 I mean, I feel like I put in like, an average. I think maybe compared to  
639 some of my friends that I have in classes, I do put in a little bit more  
640 effort and work. But, I also know they have a heavier course load than I  
641 do this semester, so they don't have as much time to put into it. So I  
642 think that also takes a factor. But I mean, like for my business class, I  
643 like do, like we have to write papers, and I know my papers are really  
644 good quality. And so I feel like just, it doesn't take any more effort for  
645 me to make good quality, than it might take for somebody else to make  
646 that quality. So I feel like it might give them a better outcome, but it  
647 doesn't take any extra work on my part. So it's hard to tell.

648

649 I: Okay. Think about some subject or class that you've taken, and you  
650 had to put a lot of effort into- to succeed. I mean, you probably did  
651 succeed, but you had to work your butt off to do it. And tell me about it.

652

653 S: Um, so that was like my physics class in high school. It was AP  
654 physics in junior year. Um, and I had to just like put a lot of effort into  
655 it, because it was like not a subject I've ever had any experience with  
656 before. Like, you don't really experience- like encounter it a lot before  
657 you get to the actual class. Versus with like math or English, you know,  
658 it's like, all building up to it. But this is just a totally new topic to me, so  
659 it was difficult. Um, and to succeed in that I had to like, ask the teacher  
660 like a lot of questions. Like I was in there every day, getting help with  
661 the homework. And also just like, with my friends on the labs, I tried to  
662 understand like, okay, what is this actually measuring? Like, how do we  
663 do these calculations? Because it was just like, not making sense in my  
664 head. And for the test, just like studying a lot, and making sure I knew  
665 what was being asked in the study guide, instead of just like memorizing  
666 the steps. Um, and I feel like that like paid off because at the end of the  
667 year I went to the AP exam, like, you can see all like, the stats on line  
668 for the county people. Like pass and fail, and like, 60% of people failed.  
669 But I got a 3, so I barely passed, but it does- I was happy with myself,  
670 (laughs). But it took a lot of work.

671

672 I: Yeah, AP classes are hard, and the tests are too. So how did you feel  
673 about needing to put in so much effort?

674

675 S: Um, like, it was just like a new- new challenge for me. I mean, I- I  
676 think I was kind of like stressed out about it because I wasn't something  
677 I was used to doing. Um, usually can like, go home and do the  
678 homework and be like, I did really well on it. But um, for that class it  
679 was definitely something I needed to put in more time and effort for.  
680 Um, so it made me frustrated sometimes, because I didn't know I wasn't  
681 understanding it. But then I was able to get help from like, my dad who  
682 is a civil engineer, so he loves physics. (laughs), um, and like my teacher

683 and like, the people in the class, who like enjoyed it and understood it  
684 better than I did. Um, so I think it was a good experience, and it's still  
685 happening, you know. I don't understand stuff very well, so I have to ask  
686 for help. But it's not something I'm like, embarrassed about. It's  
687 something- I think it's totally good.

688

689 I: All right, what did you get out of that experience? [cough] Excuse me.

690

691 S: (laughs), you're good. Um, I think I just got some like, new study  
692 skills and habits out of it. And just like, understanding what it looks like  
693 to like, meet a challenge. Um, it's uh, just yeah, a new experience.

694

695 I: Okay. Now think about a subject or a class or something that you were  
696 able to succeed in with not a lot of effort put in. Tell me about that?

697

698 S: Um, for that one, like usually I was the one that was like, helping  
699 other people. Like if they weren't understanding it very well. So like, I  
700 enjoy like, helping other people learn, and like teaching them. And um, I  
701 was like a tutor when I was in high school. So, I think for me like that's  
702 something I enjoy doing. Um, (laughs), because I- I think it's fun to help  
703 other people understand, like, stuff.

704

705 I: All right. How did you feel about not needing to put much effort into  
706 that class?

707

708 S: Um, I- I don't think it was like a bad thing. I just think it was because  
709 I needed to focus my time more on like, other classes that were more  
710 difficult. So I don't think like every class has to have like, the same  
711 amount of effort put into it.

712

713 I: Okay, what did you get out of that experience?

714

715 S: Hmm, just like understanding that like, you know, just because  
716 something is easy for me, doesn't mean it's easy for everybody. Because  
717 you know, we all struggle with different things. And learn things  
718 differently.

719

720 I: Okay. Now tell me about a student you know who puts in a lot of  
721 effort to succeed. They do succeed, but they're- every time you see them  
722 they're working their butt off. What is that telling you about- or tell you  
723 about how smart they are?

724

725 S: Um, it tells me that they do have like a really strong desire to like,  
726 succeed and do well. And I think they do probably have a lot of natural  
727 talent in it. But they also have a lot of like, dedication and like, grit, to-  
728 to do well. So like, maybe their natural talent wouldn't be getting them  
729 like, amazing grades. But like, combined with like their dedication and  
730 like, their want to succeed, they are able to do like, a lot of really good  
731 things.

732

733 I: So would you still think that they're a pretty smart person?

734

735 S: Oh yeah.

736

737 I: Okay. Now what about someone you know who doesn't need to put in  
738 a lot of effort to succeed? They just kind of breeze by with everything.  
739 What does that tell you about how smart they are?

740

741 S: Um, I mean honestly that's one of my really good friends. He is like,  
742 really smart. But he just doesn't like to do homework, or like to study.  
743 And he feels like he doesn't need to. I think that's kind of how he was for  
744 like, all of high school. And so, like, when he's- and he's- he's a

745 sophomore. So when he came here he was like failing every class, and I  
746 don't think he realized that like, that's not going to be enough to get you  
747 by. You actually have to put work into things. And so, he's still not  
748 doing great in college. So I think it's been hard for him to learn. So I  
749 think like the earlier on you can learn that you have to put work into  
750 classes, the better.

751

752 I: Okay. So, do think- still think he's smart even though he kind of tried  
753 to breeze by when he couldn't anymore?

754

755 S: I think- I still think he's like, smart as in like, the fact that he has a lot  
756 of like, natural intelligence. I don't think he's smart in the way he's trying  
757 to succeed. I think like, he should realize to try something new, because  
758 what he's trying to do isn't working. So I think he's just more stubborn.  
759 But he's just- he has a lot of natural intelligence, yeah.

760

761 I: Okay. Uh, tell about a specific time when you received feedback that  
762 you were not performing to expectation?

763

764 S: Uh, I felt like really embarrassed, and I felt like I was letting them  
765 down. Um, I felt like I- if I was going to like, be a part of that program,  
766 it was like in my [musical program]. Um, if I was like, going to be a part  
767 of that program, then I had to like, you know, give them the time and the  
768 effort they deserved and expected. Um, so I kind of like changed my  
769 focus, and I was like, okay. If I'm going to be here, I need to put all my  
770 effort into it.

771

772 I: Okay. So, would you say that you responded by sort of reevaluating  
773 the situation?

774

775 S: Yeah. Um, because it was like something I was kind of like putting on

776 the back burner, 'cause I had a lot of difficult classes. And so I realized  
777 that like, if I'm, you know, going to be a part of this, and help um, like  
778 the other people who are in the band, um, like we all want to be better,  
779 then I have to do my part to help them.

780

781 I: Okay. What was the outcome of your response?

782

783 S: Um, I got like a lot more enjoyment out of being there. I didn't feel  
784 like I was just waiting for the time to pass, just so I could like, get to my  
785 next class. I felt more like I was like, learning something and getting  
786 better at what I was doing.

787

788 I: Okay. Did you learn anything from that experience?

789

790 S: Um, I think I learned to just like, like this is like one of the things that  
791 taught me to just like, live in the moment, you know. Because if you're  
792 always like, looking for the next thing to do, and if you're always just  
793 like, waiting for it to be done with something, then your life is going to  
794 be kind of miserable. But if you're just enjoying where you're at, you  
795 know. If you're not really like, worrying about what's next, then things  
796 are going to work out a lot better, and you're going to have like, more  
797 inner peace.

798

799 I: Okay. What advice would give to, uh, a- a- a person who is struggling  
800 with a similar situation?

801

802 S: Where they- like what similar situation?

803

804 I: Like, they just- the- the situation where you were told you need to put  
805 more effort into here, or you can't stay. What advice would you give to  
806 someone in that situation?

807

808 S: Um, if I knew them really well, and I knew how they spent their time,  
809 I would maybe give some suggestions about like, "Hey maybe you don't  
810 need to be like, um, taking so many naps. Maybe you can like, spend  
811 some more time studying." Or I'd get- maybe like- maybe they had a job  
812 where they were working like a lot, and that was their only income, like  
813 I don't know. Maybe offering or like, suggesting that they go talk to  
814 someone about like, other options, so they don't have to work as much.  
815 But I think just you know, telling them to, look at their life. And like, if  
816 you value this thing, you want to be in it, you're going to have to find a  
817 way to make it work. Or maybe if you don't value it, and you're just  
818 there because people told you need to be in it, but you're not interested  
819 in it, then maybe like- you know, maybe it's time to like give it up and  
820 try something else.

821

822 I: Okay. Do you care if your peers judge you when you do poorly at  
823 something?

824

825 S: Um, I- I think I'd feel like, embarrassed because I expect like, I'm like  
826 used to doing well on things. And so when I don't, it's kind of surprising.  
827 Or not surprising, but just like, unusual. Um, so I don't really care if they  
828 judge me, I just don't want them to think that's like, normal I guess.

829

830 I: Okay. Why do you feel that way?

831

832 S: Um, because I think if- if they think that I usually do bad in things,  
833 then that doesn't say a lot about like, my personality and my character.  
834 Because I'm doing bad at something then it means like, I'm not working  
835 very hard at it, or like, putting in time or effort. So if that's like the  
836 normal for me, is just like, just barely get by or do poorly in stuff, then  
837 it's like, "She's not a very hard worker. Or she's not really, like, pursuing



838 it". So I think, um, I would rather not have my friends view me that way.

839

840 I: Okay. What about your professors, do you care if they judge you

841 when you do poorly?

842

843 S: Um, I mean, obviously like they can see everything I do. Well, like

844 my grades and stuff. So, I think I would just like make it a point to show

845 them like, "Hey, I'm like, doing everything I can to like, succeed in this

846 class. Like do you have any suggestions about like, what else I can do?

847 Because like, this didn't work, and I'm not doing great." So I mean, I

848 wouldn't be afraid to ask them for help, or to, um, go up to them and

849 have that conversation.

850

851 I: Okay. And why do you feel that way?

852

853 S: Because obviously the professors like, know a lot more about this

854 subject than I do. And so they want to be able to help the students

855 succeed. But if I don't ever go and ask for help, they can't help me, so.

856

857 I: Right, that's fair. So do you think you learn more from an experience

858 that's challenging or not challenging?

859

860 S: Challenging, excuse me.

861

862 I: You're fine. Does it matter to you if you succeed during the

863 experience?

864

865 S: Yeah. I think if something's challenging, um, that means like, I'm

866 interested in it, and I'm putting in a lot of time and effort, and I want to

867 see that pay off. Um, if something's challenging, and I'm putting all this

868 time and effort, and I'm still failing, then like, I'd feel really

869 disappointed. And I'd feel like I'd just wasted a lot of time on whatever it  
870 was. Um, so yeah. I like to be successful.

871

872 I: What if the challenge was like, a group project or something, that the  
873 teacher hands out, and he is grading you not based on whether you  
874 actually finished the project that he's assigned you, so much as, are you  
875 working hard on it, and learning? Because he doesn't really care if you  
876 compete it, he just cares if you were learning during the experience. Do  
877 you still care if you succeed in that project he gives you?

878

879 S: Yeah. I think like, if he's assigning a group or project, or she, that  
880 they have something that they wanted us to learn from it. Whether it be  
881 like, working from the other people- working with the other people, or  
882 like, the actual subject that we're studying or presenting on. So I would,  
883 um, want to show that I'm being engaged and I'm learning, and I'm um,  
884 putting in like, work and effort into the project.

885

886 I: Okay. In that situation where he doesn't care whether the project gets  
887 completed, just whether you're engaged, what does it mean to you to  
888 actually succeed on that challenge? Does it mean that he sees how you  
889 are learning, and engaging? Or does it mean that you actually complete  
890 the project?

891

892 S: Uh, I think both. I really hate leaving things like, unfinished. So I  
893 would want to like, learn and be engaged, but also like see it through  
894 until it's finished. Um, so I think I would have a problem with like, just  
895 leaving it half done.

896

897 I: Okay, so now that we've talked through all these ideas related to  
898 motivation, and effort, and challenges, how would you summarize what  
899 you shared with me?

900

901 S: I think the biggest thing is like, not being afraid of challenges, and  
902 being willing to like, put in the work and the effort. Um, and not being  
903 afraid to ask for help when you're faced with challenges. But also like,  
904 allotting in your time, even ways that you know you do spend more time  
905 on the things that are difficult. And not as much things on the time that  
906 like, don't need as much effort. Um, and I think you know, it's using  
907 your resources and asking for help, are really important. And um, not  
908 expecting that you're going to do well, but like, knowing that you're  
909 going to have to put in the work to do well.

910

911 I: Okay. Did you gain any insights during our discussion?

912

913 S: Um, I've learned that I- I mean, I think I kind of- I already knew this,  
914 but I really do like studying. And I like, do know that I'd be good at  
915 what I do, otherwise what's the- I don't want to say what's the point of  
916 doing it, 'cause I would still learn something. But if I'm not, like, doing  
917 good at something, then maybe I should try something else, you know.  
918 Something that would interest me more, that I would want to put more  
919 time into.

920

921 I: Okay. Do you think whether you succeed at something, and whether  
922 you're interested in it are tied together?

923

924 S: Mm-hmm (affirmative). Yeah. So-

925

926 I: Which one do you think is more the cause, and which one do you  
927 think is more the result?

928

929 S: So it's between being interested in something, and being successful at  
930 it?

931

932 I: Mm-hmm (affirmative).

933

934 S: I think if I'm interested in something, I'm going to want to be

935 successful at it. So I think interest is like, the cause. And then the

936 success is the result. 'Cause like, I'm interested in running, I really enjoy

937 running. But um, I'm not going to be successful at running unless I like,

938 really enjoy doing it. So-

939

940 I: Okay. Anything else you'd like to share?

941

942 S: Um, no. (laughs).

943

944 I: All right.

1     **Interview Transcript 12: Leonardo**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/19/2018

4     Transcribed by: Rev.com

5

6     Interviewer: So our goal today is for us to have a detailed discussion  
7     about your beliefs about our perceptions of the nature of your  
8     intelligence. Does that answer your question?

9

10    S: Yeah.

11

12    I: Okay. The discussion will inform my understanding of the perceptions  
13    of engineering students and will help future decisions about the  
14    undergraduate engineering experience and how it can be improved for  
15    all students. I want to hear your own thoughts and perceptions. I expect  
16    them to be different from the thoughts of anyone else. There's no right or  
17    wrong answer. Just say what you feel. I have to understand your  
18    perspectives. So, I'll be asking questions like, "What do you mean by  
19    that? Can you elaborate?" Et cetera, and these types of as- as, uh, these  
20    types of questions can end up being a bit awkward, but as I refer you to  
21    just really reflect on what you've experienced. Take your time. If you  
22    need clarification, let me know. I'll leave you time to answer. Any  
23    questions?

24

25    S: I don't think so.

26

27    I: All right. Tell me about yourself as a student.

28

29    S: Um, where to start? Uh, I, I've always been a pretty good student.

30    Um, I'm typically very detail-oriented, which means that I focus on

31    making sure all the details are correct, not just the big picture. And so,

32 um, I tend to take longer on many types of work than other people, but I  
33 also would say that I do it better than other people. And so, um, I've  
34 always gotten pretty good grades for that and, uh, you know, that seems  
35 to be continuing. We'll see. Um, so, that I'd say wou- is probably the  
36 defining characteristic of me as a student.

37

38 I: Mm-hmm (affirmative). Anything else?

39

40 S: Um, let me see. Other than, like, I think, me being kind of detail-  
41 oriented is why technical field interested me, and that interests me, um,  
42 more than maybe some other technical fields. And that may be why I got  
43 into engineering. Other than that, I don't think so.

44

45 I: Okay. So, what does it mean to you to be a pretty good student?

46

47 S: Um, yeah, that's a good question. Um, I would say that at least part of  
48 that definition would be I give, um, my best effort or close to my best  
49 effort on projects. And, um, by doing so, I've always gotten, uh, what I,  
50 uh, what I would consider to be good grades on those projects.

51

52 I: Okay. What does it mean to, to you to give your best effort for  
53 something?

54

55 S: Um, that means that I, I will spend the time on it. I won't just try to  
56 rush it bef- like the night before. Um, like, uh, I will try, at least. Uh, I'm  
57 not always successful, but I, I try to plan out, um, when I'm going to do  
58 it, or, like, find time to do it. And then, uh, once I'm done, I check over  
59 all the details to make sure that they're what I think is, uh, the best, um,  
60 the best version of my work.

61

62 I: Okay. What does it mean to you to be detail-oriented?

63

64 S: Uh, I, I've used the phrase "check over the detail" several times. So,  
65 um, I think that's a major part of, uh, what I'd say being detail-oriented  
66 is. So, I, yeah, I do the project once, um, and then I check over every,  
67 uh, everything again and maybe a third time, depending on how much  
68 time I have and how much I really value, um, the project, uh, or the  
69 paper or whatever else I'm doing. And so, just making sure that they,  
70 they fit together with the other parts of the, uh, of the project, uh, they ...  
71 um, and then that they're well, well done.

72

73 I: Okay. So, you said you take longer on a project, but feel that was  
74 better than the end. Just what does that mean to you?

75

76 S: Um, I've noticed that ... the reason why I said it is I've noticed that a  
77 lot of students seem to be able to do things in, like, you know, dash out a  
78 paper, whatever. Um, and sometimes it feels like I am completely  
79 incapable of doing that, because I will want to double and triple check  
80 everything, as opposed to just write, or, like, you know, for instance, if  
81 I'm writing a paper, um, I'm always kind of analyzing when I'm writing  
82 as I'm writing. And so, I try to make sure that's, um, that I am checking  
83 those details. Uh, but sometimes that can be a disadvantage if I'm, uh, if  
84 I really need to get it done.

85

86 I: Okay. Let's just hypothetically say for a moment that you're in a class,  
87 and you get your exams back. And you see your exam and feel like  
88 you've succeeded on this test. How do you react?

89

90 S: How do I react? Interesting. Um, yeah, I, I'd really just kind of a, a  
91 quiet, you know, good, um, to myself. And then, I'd put it away and,  
92 and, like, you know, if somebody asked me about it, I might discuss it  
93 or, um, you know, but I'd, um, I'd probably would ... I, I basically put it

94 away and I, I wouldn't really ask other people about it necessarily.

95

96 I: Uh, excel and well, moving on sort of?

97

98 S: Um, yeah. I mean, like, a little bit of congratulations on myself, but

99 there's, there is that element of moving on.

100

101 I: Okay. So, why would you react that way?

102

103 S: Um, part of it is, uh, the part about, like, not asking other people

104 necessarily about it is because I feel like a lot of times I have done that

105 and, um, unintentionally made people feel badly about their own

106 performance sometimes. And I say, you know, "I did really well." And,

107 um, and then they'll ask me how well I did, and then I, you know, I can

108 say I did, whatever, uh, I, my best hypothetical score is. And then, um, I

109 might say, um, uh, and, you know, they, I would ask them how well they

110 did, probably. And then, they would say, you know, I just got it or as

111 well, you know. Um, so, that part is probably just because I, I don't want

112 to make, uh, people feel badly. Um, the other part is, I mean, in, in both

113 college and high school, I've learned that there's always something else

114 to do, and sometimes I really don't like that. But, um, that is there. And

115 so, uh, you know, once I get back to the dorm or wherever, um, you

116 know, I need to make sure that I am willing to, uh, head on to the project

117 or, you know, give myself a rest if I have the time for that.

118

119 I: Okay. So, what do you consider to be a success on an exam?

120

121 S: Um, you know, I'd say success, uh, is something that falls into the

122 range that I am, uh, that I typically get, which is a fairly ... And it's

123 typically a fairly high range. It, it's typically As.

124



125 I: Okay. Is there a circumstance in which something less than an A is a  
126 success?

127

128 S: If I would be, for instance, in a really challenging class or, um, it's a  
129 very challenging project or exam, and I don't feel like I could have  
130 gotten an A even if I had studied more, then I feel like that, like, getting  
131 a B or C would be successful, but I would also try to find out like, wait,  
132 why, why couldn't I, uh, why didn't I feel like I get, could get an A? Is  
133 there anything other than studying? Or, you know, what else, um, what,  
134 uh, uh, anything else I could do to actually change that.

135

136 I: Okay. Does a grade curve affect your perception of what a success is?

137

138 S: Mm. Um, is this a grade curve like a certain amount of students can  
139 get an A, B, or C or is, or is it like, um, more just the highest score kind  
140 of determines what, um, score you get overall?

141

142 I: I think most, most of the time I see it based upon, uh, the average.

143

144 S: Yeah. Um, because I've heard that there are, there are, sometimes my  
145 teachers, there were who were like that only this many students could  
146 get an A or whatever, um, out of the class.

147

148 I: I think that's bogus, honestly.

149

150 S: Yeah. I mean, I, I, yeah, I don't like that type of curve. Um, so, like, I  
151 think that would probab- that type of curve would be less impactful,  
152 necessarily. Um, so, like, you know, if I would've gotten a score that  
153 would equal an A, but I got bumped down or something that, like, I feel  
154 like that wouldn't necessarily impact it. On the other hand, um, a curve  
155 that's more like based on the average and, you know, it bumps me up,

156 um, say, from B to an A ... Yeah, I mean, I, I don't think that would  
157 impact it too much. Like, I probably take the curve score mostly because  
158 that would demonstrate that I'm still in, like, um, you know, I'm still  
159 doing well, um, as, you know, compared to the class or in general. And  
160 so, um, I think that would, but I'd probably take the curve score.

161

162 I: Okay. What if you did better than somebody that you consider smarter  
163 than you are? Like, maybe the person next to you think is smarter than  
164 you are and you glimpsed their test when it came back and you did  
165 better?

166

167 S: So, how would I react to that?

168

169 I: Yeah.

170

171 S: Yeah. Um, I mean, I probably just, you know, I'd say, you know,  
172 another moment of congratulations, uh, but, you know, I wouldn't want  
173 to say that out loud or anything. Um, so, I'll just say, "Hey, I did better.  
174 That's cool. Um, you know, we'll see, uh, what happens, you know,  
175 later."

176

177 I: Okay. Why?

178

179 S: Why? Um, you know, like after a while, if that consistently started  
180 happening, I would probably revise my estimation of them as well. But,  
181 uh, as far as why just, like, um, do that, I tend to try to reserve judgment  
182 as much as possible.

183

184 I: Mm-hmm (affirmative).

185

186 S: And so, um, in that case, it doesn't make sense to reevaluate my

187 perceptions of them if I only say one ...  
188  
189 I: Mm-hmm (affirmative).  
190  
191 S: ... uh, instance of their performance. So, they may have had it that day  
192 or not really known the material or not had enough time to study, et  
193 cetera.  
194  
195 I: Okay. Would you share with anyone else that you did go to them, that  
196 person?  
197  
198 S: I probably wouldn't.  
199  
200 I: Okay. And you mentioned that you don't necessarily go around  
201 blabbing your test scores, but you don't mind answering its own ask.  
202 Right?  
203  
204 S: Yeah. That's, uh, said.  
205  
206 I: Uh, is there anyone that you really wouldn't want to answer that  
207 question towards?  
208  
209 S: Anyone who asked me that, I wouldn't want to answer that?  
210  
211 I: Mm-hmm (affirmative).  
212  
213 S: Um, I don't think I have anyone in particular that I wouldn't  
214 necessarily want to answer that question from. Uh, um, yeah.  
215  
216 I: Okay. So, what if instead of, of success, you felt like you didn't quite  
217 succeed on an exam?

218

219 S: Right. Um, I mean, I think, uh, that, generally, action would probably  
220 still be the same, especially that element of, um, moving on would still  
221 be the same. Um, and then, as far as it goes, um, I'd say, internally,  
222 something like, "Hey, you know, I, I missed this question, this question,  
223 this question," and kind of, uh, if I, especially if I didn't know which  
224 questions I missed and what, like, what the concept was that I was  
225 consistently missing, basically try to start the process of figuring that  
226 out.

227

228 I: Okay. So, why would that be your reaction?

229

230 S: Um, I think that would probably go back to being detail-oriented, and,  
231 um, so, I would try to leverage that in order to understand why I'm not  
232 doing this as well as I thought I did, um, or thought I would do. And so,  
233 and then try to use that to guide my plans in the future.

234

235 I: Okay. What if you found out that the other students in the class,  
236 there's a whole, just did quite a bit better than you did.

237

238 S: Incredibly better?

239

240 I: Sure.

241

242 S: Totally. Yeah. Um, um, I'm not actually sure that would, I'm not sure  
243 that would actually change my response too much, except maybe give  
244 me a little more impetus to try to figure out what I'm doing wrong and  
245 how to improve it.

246

247 I: Okay. Why do you think that is?

248

249 S: Um, I mean, because the, you know, the ... sorry. Um, because  
250 everyone else, um, seem to understand the material, I guess, on, on a test  
251 or what have you. And so, uh, if I'm missing something from it, you  
252 know, I, I might be able to learn from them, per se, um, or, you know, I  
253 might be able to figure it out on my own, uh, as well. So, I need to try to  
254 start figuring that out, because obviously it's not how they ... Uh, people  
255 are unable just to grasp it altogether.

256

257 I: Okay. What if someone that you don't consider to be as smart as you  
258 are did better than you on an exam?

259

260 S: Um, yeah, I mean, I think that would go in a similar way to the, uh,  
261 person who I thought was smarter than me. Uh, after a while, I'd just like  
262 to probably, uh, revise my estimation, but in general, I'd be like, "Mm,  
263 you know, they, they got something I didn't," uh, et cetera, keep in, keep  
264 that in mind, but not necessarily. It might not matter, yeah.

265

266 I: Okay. Why do you think that is?

267

268 S: Um, yeah, which is, and I thought it's a similar question to the one  
269 before. Um, her, um, I've been saying a lot of ums, but anyway.

270

271 I: That's all right.

272

273 S: Um ...

274

275 I: I'm not the one who has to transcri- transcribe it.

276

277 S: Well, that's nice. Nice for you. Um, let's see. So, I would say that's  
278 probably because, again, yeah, I like to reserve judgment. I like to make  
279 sure that I, I know at least some sort of pattern before I actually create an

280 impression or, you know. Obviously, I can't avoid doing that entirely,  
281 but I try to keep that, uh, away from that as much as possible. And so, I  
282 probably will try to apply that there.

283

284 I: Okay. Would you share with anyone else that you didn't do as well as  
285 that person?

286

287 S: That person, um, na- now, um, I guess the exception may be to the  
288 sharing if I did as well or not as well as those, those persons. Those two  
289 questions would be, like, if I actually should have known their score in  
290 the first place, uh, because, uh, from just glancing over and, like, I  
291 accidentally see it. Uh, you know, I'm probably not going to share that  
292 just because I probably shouldn't know their score in the first place. But  
293 if, like, you know, they ask me about my scoring, we exchange scores or  
294 something, um, then, I might, and then somebody else's asked me how I  
295 did, you know, I might say, "Hey, I didn't do as well as this person," or  
296 "I did do as well," or "I did better than that person," et cetera. So, uh,  
297 other than that, I probably wouldn't tell anyone, in particular.

298

299 I: Okay. (sneeze)

300

301 S: Bless you.

302

303 I: I've been sneezing all day.

304

305 S: Yeah.

306

307 I: Uh, what about, um, would you just share that you didn't do so well on  
308 that exam as others?

309

310 S: Yeah, if they asked, um, I probably would. And then, um, yeah, I

311 mean, probably the same thing as if they asked, um, if I did well on the  
312 exam.

313

314 I: Why don't you mind sharing with the people when they ask?

315

316 S: I think that's something I probably had gotten used to from, yeah,  
317 from maybe middle school or high school, just, um, just ...

318

319 I: General culture, you think?

320

321 S: Yeah, I think that's one of the general culture where people will ask,  
322 "Hey, how did you do on the test? What did you think? What do you  
323 think of this question?" That sort of thing. Um, and, you know,  
324 sometimes it's guessing right after the test how you think you did. Other  
325 times, that's, you actually got the score. Um, but I think it's just  
326 something that I'm used to. It's more of a culture thing than something I  
327 am, um, uniquely inclined to do.

328

329 I: Okay. Does it matter to you if your peers think you're smart?

330

331 S: Um, well, I don't really know if they do. I do think that it does matter  
332 to me, some.

333

334 I: Okay. Why?

335

336 S: Um, you know, uh, because I'm, I'm used to being this way. I'm used  
337 to being detail-oriented and, you know, trying to do, um, very well at,  
338 uh, school-related things and non-school-related things. And so, um, I've  
339 always been able to do that. And so, I, um, I tend to, you know, believe  
340 that I'm fairly smart. And so, um, I don't know. I li- I like, um, I would  
341 like other people's perceptions or reflect my beliefs and my self-image.

342 But, you know.

343

344 I: Okay. Do you care if your professors think you're smart?

345

346 S: Um, you know, I would probably say that that's basically the same  
347 reaction as friends.

348

349 I: Okay. Is there any, any difference in why you would feel like you  
350 want them to be smart, er want them to think you're smart?

351

352 S: Right. Um, I mean, they or the TAs are the ones that are also grading  
353 me on how well I'm doing. And so, um, you know, I'm used to doing  
354 well and I like doing well. That's how I, you know, I'd like to be in that  
355 situation.

356

357 I: Okay. What motivates you to pursue an engineering degree?

358

359 S: Mm, um, to be specific, can I be specific about my degree path?

360

361 I: Of course.

362

363 S: Okay. Um, so, I'm currently in the computer science program, and I  
364 think, like, in high school, I was in a specific engineering program. And  
365 so, I started exploring engineering in high school. And I think, like, and  
366 actually that interest in engineering I think mostly stemmed from, I was  
367 on a robotics team in middle school. And so, uh, on the robotics team, I  
368 got kind of, I, I got used to the engineering process and I got exposure to  
369 both hands-on building as well as programming. And so, I found out  
370 that, especially with, with all sorts of engineering, you have to be  
371 detailed-oriented and you have to make sure the details will match. And  
372 I, I think that fits my personality very well. But also with programming,



373 um, you could, um, you have to make sure that fits, but also it was much  
374 easier to change and, uh, much easier to make sure than everything put  
375 together. So, um, I think those are kind of a lot of why I'm interesting in  
376 an engineering degree.

377

378 I: Okay. Why do those feel motivating to you?

379

380 S: Uh, why does, um, like being, making sure the details fit and that sort  
381 of thing?

382

383 I: Yeah.

384

385 S: Um, I think more that that's, that's what I like doing. Uh, and so, that's  
386 why it's motivating. Um, and then, for programming, specifically, it  
387 helps that it's just everywhere and how we live our lives. And so, I, it's  
388 kind of cool to be able to do something that might affect that.

389

390 I: Okay. So, if you were to make a pie chart of your motivations as a  
391 student, what percent would you say you are motivated by your grades  
392 versus your desire to learn?

393

394 S: Mm. Um, let's see. I would probably say, I would say that this very  
395 much can depend on the subject that I am learning about, because, um,  
396 in some classes that I may not feel are necessarily worthwhile, my  
397 grades will motivate me much more than, um, than my desire to learn in  
398 that subject area.

399

400 I: Mm-hmm (affirmative).

401

402 S: Versus, like, in programming classes, I'd probably say my desire to  
403 learn is, like, uh, maybe 60 or, um, 65% of, um, of that versus grades

404 maybe more like a 30% or so.

405

406 I: Okay. So, if your motivation to learn was 60%, your grades were  
407 30%, what, where is that other 10% going?

408

409 S: Right. Um, I did leave that in there for a reason. (laughs) Let's see. I'd  
410 probably say that that's a combination of ... I'm not sure entirely what  
411 you're including in grades, but, like, um, I think that's probably a  
412 combination of approval from friends and approval from family, um, as  
413 well as, uh, maybe like the community that I might get from being in  
414 that specific class.

415

416 I: Okay. So, is there a situation which your answer might change?

417

418 S: From that pie chart?

419

420 I: Mm-hmm (affirmative).

421

422 S: Um, so, I, I think I already said one where, like, if, um, to give an  
423 example, I think, I'm currently in honors public speaking, and I wish that  
424 ... And I, I've heard that, like, maybe 10 years ago that there used to be a  
425 way of test to test out of public speaking as a requirement for, um, your  
426 major or for, um, other things. And I wish that that, uh, was there  
427 because consider myself to be a fairly good public speaker. I was in  
428 debate and forensics in high school and, uh, for three and two years  
429 specific, uh, respectively. And I learned a lot about public speaking  
430 through those clubs. And so, uh, clubs and classes. And so, I feel like I  
431 wouldn't necessarily need the public speaking course to understand how  
432 to speak well. And so, I wish I could sta- test out of that. So, in the case  
433 where I have to take the course, but I don't necessarily, um, like, or once  
434 to take, uh, one to learn the material, um, you know, I, I will try to do

435 well because of grades. And so, I feel like that may, um, that may  
436 probably flip the amount. So, probably 60% would be grades, 30%  
437 would be desire to learn to latch on whatever, to whatever I might find  
438 interesting in a class that I may not find interesting.

439

440 I: Okay. In what ways are your grade important to you?

441

442 S: Um, I just say that there, that there's two ways. Um, one is they're a  
443 way for me to self-evaluate and figure out whether I'm one partially at  
444 least learning the material, and, two, whether I'm doing well in a class,  
445 which can be slightly different things. Um, and the second major thing  
446 would be that they're, um, they're measures of, uh, I guess that would  
447 combine with the first one, and that they're measures of how well I'm  
448 doing in the professor's eyes specifically, uh, or the TA's eyes, if they're,  
449 they're the ones grading. And so, uh, that can be a little bit of, like,  
450 people's opinions of me.

451

452 I: Okay. In what ways is learning important to you?

453

454 S: Um, I would say that, yeah, I'd say there's probably two ways again.  
455 Um, first one is, sometimes, things are really interesting.

456

457 I: Mm-hmm (affirmative).

458

459 S: And, like, um, yeah, the weird thing is I am in engineering field, but,  
460 uh, sometimes I really love learning about history, because you can see  
461 how that can, that causes became effects that cause, um, other things to  
462 happen, and that it still impacts today. And so, uh, I really like figuring  
463 that out, or, um, when you're programming, uh, I really like figuring out  
464 how to do things, um, not necessarily for the class, but for everyone's  
465 sake. Um, but also, then, uh, you need some sort of, you need some

466 amount of learning to get a job. You need some sort of learning to be  
467 able to, uh, function in society and/or money to support yourself. And  
468 so, that's important as well.

469

470 I: Okay. So, let's hypothetically say you're enrolling in classes for next  
471 semester. And one of those classes that you're enrolling in, you needed  
472 to graduate, maybe it's part of major or maybe not quite, just an elective,  
473 but you have two choices between times on lectures and the top by your  
474 professors, but both work for your schedule. So, professor, you, you  
475 know them both by reputation. Professor A, the rumor is that you'll learn  
476 a lot, but you'll have a hard time succeeding in his class, not that it's  
477 impossible, but it's just really difficult.

478

479 S: Right.

480

481 I: And Professor B, you're not going to have a super hard time  
482 succeeding in the class, but you may not learn as much in the end.  
483 Which one do you prefer to enroll in?

484

485 S: Mm. That's a good question. Uh, the problem in this situation of, is  
486 that there's lots of unknowns.

487

488 I: Mm-hmm (affirmative).

489

490 S: So, um, you know, the rumor is what the rumor is, but that would  
491 depend on all those factors, including how well I can trust the rumor,  
492 um, and then how many, you know, that, that's depending on how many  
493 sources I have for that, how many of those sources I really trust and that  
494 you're friends with.

495

496 I: Mm-hmm (affirmative).

497

498 S: That sort of thing. Um, but if I do trust the rumor ... Oh, the other  
499 thing that would depend on it I guess is like how, exactly how hard that  
500 people are saying it is to succeed. So, like, if it's like, like, um, almost no  
501 one gets an A, um, versus like, uh, like, you know, everyone in the class  
502 gets an A, a B, or C, uh, for the two different professors, um, then there  
503 might be differences for, like, you know, 10 people out of 50 or 60, you  
504 know, you know, that sort of thing. But that may not be what you mean.  
505 Uh, anyway, so that's part of the thought process. So, if, uh, the first  
506 professor, the one that's really hard is, people are saying that, like, it is  
507 almost, like, one person or zero pers- people out of 50 can get an A in  
508 that class, like, it's, it's that hard, um, that would make it a lot harder to,  
509 for me to enroll in that class. Um, and I'm not entirely sure what I would  
510 do there. Uh, I probably ...

511

512 I: What if it's more like there's probably about five to 10 people in the  
513 semester ...

514

515 S: Yeah.

516

517 I: ... who gets Bs and As.

518

519 S: Yeah. So, then, I probably would enroll in the first professor's class.

520 Um, if it was like, yeah, the zero, one, I may, I may enroll in the, the  
521 other professor's class.

522

523 I: So, it's not that you're afraid of hard work. It's just how, how likely are  
524 you to see your hard work pay off?

525

526 S: Yeah, that's definitely part of it, uh, but also, I, I would say that I, I  
527 don't like hard work where it's not actually teaching me anything. Uh, if,

528 to give an example, in high school, our, um, AP U.S. history teacher, is  
529 that AP U.S. history teacher that I had was very, um, the, the class had  
530 very intensive notes. Uh, they had to be of a specific style and they  
531 tended to be of, like, six, they tended to be like six pages, um, every ...  
532 No, not, um, six to 10 pages every time to get it right here. Um, it's  
533 either every week or two weeks. And so, then, the, the thing about the  
534 notes though is like I could do them. Uh, I had enough time, even  
535 though that would have cut into my free, that would cut into my free  
536 time specifically. And I did do them to get the grade in the class, but at  
537 the same time, those notes, I, I would have done nearly as well in the  
538 past without having done the notes, that I would have done with the  
539 notes.

540

541 I: Mm-hmm (affirmative).

542

543 S: Because I, I would have understand the material nearly as well. And  
544 so, uh, that, that comes down to say that I don't like busy work or some,  
545 something that's only busy work, um, for me specifically.

546

547 I: Well, uh, let's say the, the rumors are pretty, uh, believable.

548

549 S: Yeah.

550

551 I: But the rumor is that in that hard class, you will come out with a lot  
552 more information. Does that help at all?

553

554 S: Right. Um, yeah. Um, assuming they're using the same textbook  
555 though, um, and the information is mostly in the textbook that I can  
556 mostly get the information from the textbook. So, that doesn't help as  
557 much as we might think.

558

559 I: Okay. What if they were using different textbooks?

560

561 S: Yeah. Um, well, so, you know, I say if, if, really, yeah, if the work, if  
562 the worth is, if the work is worth that, yeah, if the work is worth it, uh, if  
563 it will, if it's, there's a possibility anyway that it will pay off in grades  
564 and I will gain more information, then I would probably, uh, choose that  
565 professor's class. And I guess the other thing I haven't said yet that I  
566 need to keep in mind is, uh, most of my scholarships are contingent  
567 upon a fairly high GPA. And so, I do need to balance keeping that GPA  
568 with the higher score.

569

570 I: Okay. Can you think of answer or situation where your answer might  
571 change like ...

572

573 S: Um, from, uh, taking teacher A's class?

574

575 I: Sure.

576

577 S: Uh, the first teacher's, first professor's class. Yeah, um, I mean I  
578 remember once. First would be if, like, you get a lot of information, but  
579 there's also a lot of busy work. I think it's very possible that I would  
580 change my answer in that situation. Um, also, again, yeah, if they're  
581 using, if they end up using the same textbook and I think of the  
582 information for the textbook, or if I'm getting, get the information from  
583 maybe other people, um, if I'll need it later, uh, that sort of thing, might  
584 change my answer. Um, and then, yeah, I mean if the rumors aren't as  
585 believable, I might change my answer back.

586

587 I: Mm-hmm (affirmative).

588

589 S: Um, yeah. Um, yeah. I think that's it.

590

591 I: Okay. Tell me about your learning and studying strategies.

592

593 S: Okay. Um, the weird thing about this semester has actually been that  
594 a lot of my classes have been, for the first quarter or so, um, that would  
595 be my programming classes and my economics class, uh, specifically.

596 They have been going to the material that I've been taught in some way  
597 in high school. Um, so, I did like a Java programming class in high  
598 school and I did a economics, but it wasn't a full macro economics class  
599 in high school. Um, so, but those classes, like, uh, I can go to class and I  
600 can, uh, do the work, uh, make sure I know the material by reviewing  
601 my study notes before any test. And then, I will do fairly well. Uh, on  
602 the other classes, um, like, honors public speaking is fairly project-  
603 based. So, uh, I don't typically have to study, per se, for that class. Um,  
604 uh, there are a few tests, uh, which I typically look over my study notes  
605 for, like, one or two nights beforehand, uh, make sure that, like double  
606 check in my mind that I think I know the material. Um, and then, let's  
607 see. Oh, yeah. Um, and, yeah. I mean, that's, that's most of my studying,  
608 is either, like, uh, working through any practice problems that I have  
609 reviewed if I really don't think, um, I know the material. If I think that  
610 our, uh, if I start out thinking that I know the material, I'll just look over  
611 my study notes, make sure I, um, double check everything that I don't  
612 think I'm as, uh, have the knowledge precisely as I want to.

613

614 I: Okay. How did you come to use these strategies?

615

616 S: Um, so far, anyway, they're very similar to the strategies that I used  
617 during high school. Um, and so, I would say that, uh, I kind of got the  
618 strategies for, um, for what, um, from what I did through, through  
619 middle school and high school. So, um, especially, like, in middle  
620 school, um, work wasn't necessarily challenging. Classes weren't



621 necessarily challenging. Uh, in high school, that, that difficulty did ramp  
622 up a bit. So, um, but some of the difficulty was busy work and some of it  
623 was actually real difficulty.

624

625 I: Mm-hmm (affirmative).

626

627 S: Um, so, so far, basically being, I've been able to use these with fairly  
628 good, um, success to keep my grades. Um, the only, like, in, in calculus,  
629 I would have to do more, like, working practice problems and, uh,  
630 making sure I could apply the concepts, uh, to make sure that I could fit  
631 everything together.

632

633 I: Okay. How did these strategies change over time?

634

635 S: Um, more retrospective questions. Uh, so, I think in, in middle  
636 school, I'd say you could just, um, you could mostly just do the work,  
637 um, and then take the test and you, you'd know, everything works for  
638 me. Um, in high school, yeah, I had to come up with more, like, uh,  
639 ways of making sure I'll double check myself and making sure my  
640 metacognition was correct. Um, and so, like, um, one of those things,  
641 like in high school we did, um, it's just a particular type of notes, um, I  
642 cannot remember the acronym, uh, but ... And so, I think I knew the  
643 similar style of taking notes, um, today, like, um, writing the topics kind  
644 of in the left corner and then going, moving further right as you, uh, go  
645 down the, kind of a tree of, um, things that are more the less just, more  
646 the less general.

647

648 I: Less the more?

649

650 S: Or, uh, less the more, specific, yes.

651

652 I: Okay.

653

654 S: So, um, I think that kind of developed during high school.

655

656 I: So, how does it feel over time you get to sort of a new level of  
657 schooling in which you realize that you need to spend more effort, more  
658 time studying?

659

660 S: So far, I have not really hit that from college yet. Um, so, the only one  
661 that I would say really happen was high school. Um, so, I, I took  
662 Calculus BC. So, that was, uh, a class that definitely was more  
663 challenging than the typical.

664

665 I: Yeah. I remember I took that class too.

666

667 S: Yeah. Um, so, yeah, I mean, sometimes, uh, it feels kind of annoying  
668 that you have to, have to change, uh, um, that you can't get by as easily.  
669 Um, but I would say, you know, I, I kind of got over that, um, a little bit,  
670 and just realized that I, I had to do, I had to, um, you know, actually  
671 write up the problems and, and, uh, actually solve them instead of just  
672 looking them over, things that I know how to solve them, and get them  
673 wrong, and it's faster, whatever.

674

675 I: Mm-hmm (affirmative).

676

677 S: So, um, that was probably, and that was, that was the reaction I had,  
678 like, calculus, uh, anyway. And then, like, uh, the AP level language  
679 class, like language arts classes were more just, um, project-based.  
680 There, there weren't as much test or tests were fairly low.

681

682 I: Mm-hmm (affirmative).

683

684 S: Um, so, yeah, I'd say that's, that's mostly it.

685

686 I: Okay. In general, how much effort would you say you put into your  
687 classes?

688

689 S: Um, I would say that, I would say two things, that one, it scales with  
690 the class. So, if the class requires more homework or more, um, setting  
691 for that test, that sort of thing, uh, I will put in more effort to try to keep  
692 basically a similar grade to other grades that I, uh, kind of get like  
693 basically an A. Um, also, I would say that I do put in more work than  
694 someone who can just dash off things and hand them in and say, you  
695 know, "I'm perfectly fine with that." Um, and, you know, it's probably  
696 fairly good. It's just not, um, uh, I don't want to say perfect, because I'm  
697 not perfect, but, um, it's just not double and triple checked to make sure  
698 that things, uh, work together well. So, um ...

699

700 I: So, trying to go for excellence since perfect is unattainable?

701

702 S: Yeah. I mean, I, I definitely, um, I definitely am a perfectionist in  
703 some way.

704

705 I: Sure.

706

707 S: Um, and so, um, and, yeah. Like I, I've learned how to deal with that,  
708 uh, through middle and high school, so.

709

710 I: Okay. Do you feel like you learn most of the classes that you have to  
711 put more effort into?

712

713 S: Mm. Um, I don't think there's necessarily a consistent, a consistent

714 connection between those two. Uh ...

715

716 I: What about more of a trend?

717

718 S: Yeah. I think that probably is a trend. Like, I think with calculus, for  
719 instance, I feel like, uh, because it was tough, I may not have learned it  
720 quite well enough. And so, I may have been, like I may have been  
721 getting rusty at a faster rate than in other classes, um, versus classes that  
722 are a little bit less hard than that. I do think I, I may have learned, uh,  
723 more from my baby language and, uh, that sort of thing. Um, and then,  
724 yeah, like, at the, at the very low end, you, you start having less learning.

725

726 I: So, is it sort of a, you don't want to nibble, but you don't want to bite  
727 more than you can chew either?

728

729 S: Yeah.

730

731 I: Okay. What about compared to your peers? Do you feel like you put  
732 more or less effort than your peers in your classes?

733

734 S: My peers right now?

735

736 I: Sure.

737

738 S: Like, um, so part of how it's hard to answer this question is because I  
739 am in, um, the C- the CS scholars program, which is, um, a group of, uh,  
740 a smaller group of students that's made up of people who already have  
741 some type of experience mostly.

742

743 I: Mm-hmm (affirmative).

744

745 S: Uh, and so, I think a lot of people, and there are, uh, more people in  
746 there, a larger proportion of people in there are willing to put in similar  
747 or possibly more effort than me. Um, I'd say mostly similar effort, uh, in  
748 that group. But then, in, in a large lecture class, like my economics class,  
749 um, I think it would be more like I'm willing to put in more effort than  
750 most people.

751

752 I: All right. Think of a substitute class or something that you succeeded  
753 that you had to work your butt off to do it. Tell me about it.

754

755 S: I'd go to calculus again. Um, and so, tell me about it is a very open  
756 question, but, yeah, I'm not sure there was a dramatic moment where,  
757 like, I get my test back and it's a, uh, it's a C or whatever.

758

759 I: Mm-hmm (affirmative).

760

761 S: Um, but I do think I felt like, um, my grades in that and my  
762 performance in that was kind of slipping. And so, that means that I had  
763 to, uh, find other ways to keep on top of that, um, than I have been using  
764 previously, which I described in, yeah, slightly earlier questions.

765

766 I: Okay. How did you feel about needing to put in so much effort?

767

768 S: Um, yeah, at that time, I think I was annoyed, um, at least, at least a  
769 little bit, because, um, if you're used to not putting in much, um, if you're  
770 used to not putting in as much, then it can be harder or annoying to put  
771 in more. Um, but, and, you know, I do think I've gotten more rusty in  
772 that subject than other subjects that I've learned. Um, so, maybe I didn't  
773 put in enough. But, um, overall, I think it was more satisfying to  
774 actually, um, to make sure that I finish that with, uh, um, a grade that  
775 satisfied me.

776

777 I: Okay. What did you get out of that experience?

778

779 S: Well, the obvious one at the time was, uh, uh, you know, I got the, the  
780 A that kept my GPA up. The, the less obvious ones were, which I'm not  
781 entirely sure if this is correct, because I have not had a class like this in  
782 college yet, but I think I'll probably be less annoyed when I have to work  
783 really hard again, um, to make sure I get, uh, what I, (laughs) you know,  
784 make sure I get what I need to get, so I keep my scholarships and keep  
785 my grade up.

786

787 I: Okay. Now, to think about and tell me about a subject class that you  
788 were able to succeed in without much effort at all.

789

790 S: Mm. Um, um, now, I'd, I'd say that, uh, most classes at high school  
791 did a fairly good job at keeping the level of effort required, uh, above  
792 like the, the minimal. Uh, I'd say that probably, uh, a, a Web  
793 development class I took in high school. Uh, I already knew some  
794 HTML at that point. And so, um, I, I was way beyond the other people  
795 that are taking that class, ex- uh, except for a few. And so, um, let's see,  
796 like I made, um, I started working on the final project basically for that  
797 class, I think, um, like, two or three weeks before everyone else started  
798 on it, because we got, uh, or I got done quickly enough. So, um, let's see.  
799 So, what the teachers did is actually ma- made us tech support for the  
800 other students just a little bit. Um, and then, we can break on our own  
801 projects as well. So, um, that was I think not a bad way, necessarily to  
802 get us, uh, to keep us from being bored, because I think it was, um, more  
803 boring than other classes sometimes. Um, but also it's in a subject I like  
804 as well.

805

806 I: Mm-hmm (affirmative).

807  
808 S: So, uh, and, yeah, I like to being able to work with some other, some  
809 other people who work faster than, uh, than the others.  
810  
811 I: Mm-hmm (affirmative).  
812  
813 S: Um, a lot of projects, like the final project, or, um, another ... Uh, we  
814 actually started working on a project, and I don't think we finished it, so.  
815  
816 I: Okay. How did you feel about that, the, the fact that you got it done so  
817 quickly?  
818 [the computer in the room turned on without prompting]  
819 S: Um, sorry. That's actually kind of weird. (laughs)  
820 I: Oh, I think it's just, it's rebooting or something.  
821  
822 S: Yeah. I, I think the person on, he didn't shut it down. But, um, yeah. I,  
823 it's just so weird going through the IOS uh, situation.  
824  
825 I: Mm-hmm (affirmative).  
826  
827 S: Anyway, um, so, yeah, first, I do think it felt ... Yeah, I mean, I, I do  
828 think that in, in a way, I do want to be challenged. Um, I think one of the  
829 things I liked about, um, m- my more advanced coding class this  
830 semester is the projects do require me to sit down for a fairly long period  
831 of time.  
832  
833 I: Mm-hmm (affirmative).  
834  
835 S: And figure out exactly how to do it and then actually build it. And so,  
836 um, versus than that, it was, in that class, it was really easy to do that.  
837 And so, I did, um, want to make something that was better than, you

838 know, what we, what we ended up making. Um, well, what, what was  
839 super easy to make and what the assignment required.

840

841 I: Okay. What did you get out of that experience?

842

843 S: Um, I think that would probably be, you know, I learned a little bit  
844 more HTML, learned a little bit more like CSS and stuff. Um, I think, I  
845 think I did gain some appreciation for, you know, um, challenge in, in  
846 that area. Um, but I mean, I don't know what else.

847

848 I: Okay. Now, think about a student you know who succeeds, but every  
849 time you see them, they're working their butt off to keep succeeding in  
850 school and such. What does that tell you about how smart they are?

851

852 S: You know, um, the, the, the person or two that is easy to think of right  
853 now, anyway.

854

855 I: Sure.

856

857 S: Um, you know, uh, I, uh, I know from talking with them and, uh, on,  
858 especially in other subjects that they are smart, um, they just may, you  
859 know, they may not have started with the information that I already had  
860 or they may not have started with some of the skills. And, you know, the  
861 fact that they are working really hard to stay with, uh, with, uh, to stay  
862 up to date on the skill and with everyone else, um, you know, it's, it's, I'd  
863 say that's kind of cool. And then, I mean, that doesn't really impact  
864 necessarily as to where they are. And, you know, they can gain the  
865 skills, um, with the effort they're putting in, which is kind of cool.

866

867 I: Okay. Um, think about someone you know who just breezes through,  
868 barely any effort, but they still succeed. What does that tell you about



869 how smart they are?

870

871 S: Versus, what's the versus, I'm not entirely sure I can think of a  
872 specific example of this person, but, um, in general, I would say that,  
873 like, to me, that implies that, like, they can do work really quickly that is  
874 good enough, um, good enough for whatever standard they have set for  
875 themselves. And so, um, they're just going to do that work and then, uh,  
876 move on, basically, um, and do whatever they want to do. And so, um,  
877 yeah, I mean, the problem is I'm not entirely sure how that, how that  
878 would necessarily correlate with, um, their actual abilities and how  
879 smart they are and as a person. Um, and so, I'd probably say, you know,  
880 maybe they figured out that they just don't, they only need to do this  
881 much.

882

883 I: Okay.

884

885 S: Yeah.

886

887 I: And do you think it might just not mean anything at all as far as how  
888 smart they are?

889

890 S: Um, I, I mean, I definitely think that that has an impact on, uh, what  
891 skills they might end up with.

892

893 I: Mm-hmm (affirmative).

894

895 S: And what they will be able to do in the future. But I think for right  
896 now, it implies more about how lazy they are or how, how non-detail-  
897 oriented versus detail-oriented or, or whatever.

898

899 I: Work ethic?

900

901 S: Um, yeah, maybe some work ethic. Um, maybe they just don't need  
902 to, need to check details. Or, yeah, you know, it implies something that  
903 they're working at it more than it implies anything about their  
904 intelligence.

905

906 I: Okay. Now, tell me about a specific time when you received some  
907 kind of feedback that you were not performing the expectation.

908

909 S: Um, I mean, I can think of a lot, but they're mostly in team settings.  
910 Um ...

911

912 I: That's okay.

913

914 S: Yeah. Um, I mean as far as a calculus, I mean, it's, you know, I didn't  
915 really see, I, I did see my grade flipping, but I, I never got like, uh, there  
916 never was a dramatic moment like that. Um, so, and, you know, I, I kind  
917 of refocused on that in that situation. Um, as far as other situations, like  
918 when I, when I did, um, debating for forensics in high school, um, you  
919 know, uh, and I got, um, and we lost rounds or something similar, uh, I  
920 would really try to figure out what the judge didn't like or what they,  
921 um, what they, what they wrote on the ballot for us to improve upon.

922

923 I: Mm-hmm (affirmative).

924

925 S: And, uh, try to, uh, try to change that and try to practice that. So, I  
926 think those probably would answer your question.

927

928 I: Okay. How did you respond to being told that you weren't performing  
929 expectation?

930

931 S: Um, like being told that you weren't performing up to expectations by  
932 itself doesn't help at all. You need to know what you need to do to get  
933 better.

934

935 I: Okay.

936

937 S: Or what, you know, what you need to do to actually perform, uh, up  
938 to expectations or improve or, you know, and you sort of set to know.  
939 And so, really, like, if I'm told, uh, "Hey, you weren't doing this very  
940 well. You know, uh, I, um, think you got to do this, this and this," and,  
941 you know, try to evaluate, um, you know, how well I thought I was  
942 doing those things in the past, how well, um, they thought ... what, you  
943 know, what's the difference between how well I thought, uh, I was doing  
944 and how well they thought I was doing, and, and then see, um, what I  
945 can change to make that improvement.

946

947 I: Okay. So, have you taken that action before with something that ...

948

949 S: Um, I'm not sure I could pull up anything specific. Um, I'd say that  
950 pretty much in all areas, like debate, um, and forensics are, are big ones  
951 where, you know, we'd get comments on, on a ballot, um, because  
952 debate and forensics, uh, possibly there's teams of two people.

953

954 I: Mm-hmm (affirmative).

955

956 S: So, we get comments on a ballot and, um, you know, you didn't have  
957 evidence for this or your, um, cards weren't, your evidence, uh, piece of  
958 evidence weren't recent enough.

959

960 I: Mm-hmm (affirmative).

961

962 S: Um, which is, uh, necessary for some things. And so, we'd go back to  
963 the drawing board and try to find pieces that were recent enough or we  
964 try to practice, do practice round to figure out that.

965

966 I: Mm.

967

968 S: Um, figure out how to respond at particular arguments, um, or how to  
969 speak in a better way. And so, I'd say that, uh, that's a major way of how,  
970 um, how I tend to respond is not, um, not just like ... And it's trying to  
971 get better, really.

972

973 I: Okay. Um, have you seen any outcome of the attempt to get better?

974

975 S: Um, yeah. I mean, one is just that, you know, I do con- continue to do  
976 well in school and I do continue to, um, you know, respond to any  
977 feedback and assignments, and try to do that. And that does, um, have  
978 results because I, I do do well in school still. So, I definitely say that's  
979 part of it. Um, to go back to the debate analogy ...

980

981 I: Mm-hmm (affirmative).

982

983 S: Um, I get, you know, I was in policy debate for three years. And so,  
984 you know, first year, you're mostly learning the ropes and, uh, doing  
985 well. And then, in second year, you get thrown in with everyone else,  
986 kinda. And so, um, that was when we got to, like, um, we got a lot of  
987 comments or, you know, I got a lot of comments on a lot of things. Um,  
988 and then, the third year was more, you know, I fig- I figured out my  
989 niche in debate, and actually, um ...

990

991 I: Mm-hmm (affirmative).

992

993 S: ... and went on to do fairly well at, um, uh, at the tournament that fits  
994 my niche. And so, I didn't win the tournament by any means.

995

996 I: Mm-hmm (affirmative).

997

998 S: But, um, got, uh, to, I think we, we ended up, um, getting to see some  
999 final report, finals maybe. So, um, yeah. We're, was in the top, uh, half  
1000 of that tournament, which is already the top percentage of people.

1001

1002 I: Right. So, did you learn anything from that experience?

1003

1004 S: Um, learn anything in what way?

1005

1006 I: Learn anything about how to respond to negative feedback and such?

1007

1008 S: Right. Yeah. I think that, you know, I've, I've been trying to practice  
1009 this, um, all along. So, that's, this is basically just, uh, kind of reinforced,  
1010 um, a lot of what I already had, but, uh, the, you know, you need to, um,  
1011 you know, most negative feedback does have a point. And so, you need  
1012 to figure out how much of a point it has and then try to make the  
1013 changes that actually address that.

1014

1015 I: Okay. What advice would you give to someone who's struggling of a  
1016 similar situation?

1017

1018 S: Um, why they're getting a lot of negative feedback or ...

1019

1020 I: Mm-hmm (affirmative).

1021

1022 S: Yeah. Um, so, I'll just say, you know, try to examine where you think  
1023 you are, where you think, you know, what, uh, what you think you're

1024 doing, um, and then what the people who are giving you negative  
1025 feedback, what they think, um, where they think you are, or what they  
1026 think you're doing, um, wrong. And then, like, see, see how much of that  
1027 is valid, because, you know, most of the time it is. Sometimes it isn't  
1028 necessarily. Um, so, and then, from there, figure out a course of action  
1029 that, um, can improve and get you closer to where they'd like you to be.

1030

1031 I: Okay. Do you care if your ... (Stutter)

1032

1033 S: (laughs)

1034

1035 I: Sorry. Do you care if your peers judge you when you do poorly?

1036

1037 S: Excuse me. Um, I think that goes back to one of the first questions  
1038 where it's, um, where it was ...

1039

1040 I: Do you care if they think you're smart.

1041

1042 S: Yeah, that, that question. Um, so, I mean, I think those are kind of  
1043 connected. Uh, I would say that, like, you know, uh, if, if my peers are  
1044 completely wrong, like I'm actually doing well or I'm doing something  
1045 that I, you know, believe in and so that's why I, you know, need to do  
1046 something, you know, that sort of thing, um, then, yeah, I mean, I, I  
1047 care. But there's a thing I care about more, uh, versus, you know, if, if  
1048 they're right and like, I'm, uh, you know, I'm, I am not doing as well as  
1049 necessarily I'd like to be, um, which probably is a little influenced by,  
1050 um, what my, uh, my peers think of me, um, then I will try to make  
1051 changes for that. So, uh, I, I do, I'd say I do, I do care a bit.

1052

1053 I: Okay. What about your professors? Do you care if they judge you if  
1054 you do poorly?

1055  
1056 S: Yeah. So, that, um, well, yeah, that, there's a more tangible way to see  
1057 that, which is grades.  
1058  
1059 I: Yeah.  
1060  
1061 S: So, you know, I, I definitely care about that to, you know, keep  
1062 scholarships and stuff. Um, but then I'd say the rest of it goes back to,  
1063 you know, do you think your, your professors think you're smart, um, or  
1064 do you care about that. And so, um, I'd say that it may not matter as  
1065 much as peers.  
1066  
1067 I: Mm-hmm (affirmative).  
1068  
1069 S: Um, in that sense. But, I don't know. I do think, I do think I do strive  
1070 for that, sometimes. Um, yeah.  
1071  
1072 I: Okay. Do you think you learn more from a challenging or not  
1073 challenging experience?  
1074  
1075 S: Um, I mean, yeah, uh, it ... Well, I don't know. I'd say that, like, with  
1076 a challenging experience, um, you may learn things, uh, you know, not  
1077 that, not just with the material or whatever you're doing, but with how  
1078 you react to things and how, uh, you, um, like, how you can study better  
1079 or need to change in some way. Um, but, like, if the experience is too  
1080 challenging, sometimes you can only learn that. Then you, the material  
1081 might fly right by because you didn't adjust fast enough or something of  
1082 that sort.  
1083  
1084 I: Sort of like how humans need something to connect to in their brain  
1085 before they can add new information?

1086  
1087 S: I'm trying to figure out if that's correct. But, anyway, uh, yeah. I,  
1088 yeah, I'd say that's kind of similar. Um, I just, uh, yeah, I feel like if it's  
1089 too challenging, yeah, you may figure out too late or you may just learn  
1090 how you need to change as opposed to actually the content that you may  
1091 have, um, been trying to learn all along. Uh, and so, then, if something is  
1092 not challenging, you may be able to learn the content, but, um, not  
1093 necessarily life skills or, uh, any sort of thing that you need to change.  
1094 And that, I mean, you know, it may not be as much of a content because  
1095 it's less challenging, um, you know. So, it's that sort of, kind of a bell  
1096 curve type of thing, I think.  
1097  
1098 I: If it was an experience you learned a lot from, does it matter if you  
1099 succeeded doing that experience?  
1100  
1101 S: You know, um, I might, I might like to say no, but, like, when it  
1102 doesn't matter to your future or something like ...  
1103  
1104 I: Mm-hmm (affirmative).  
1105  
1106 S: ... you know, if, uh, you know, if you're taking a zero-hour course and  
1107 you, you know, you failed it, but you learned a lot in the process or, you  
1108 know, if you, um, end up starting a company, trying to design something  
1109 big and that fails, but you learned a lot, like, uh, you know, the, as far as  
1110 the learning goes, that's really important, but also, you're now out of  
1111 work. So, you need to find some sort of work, you know.  
1112  
1113 I: Sure.  
1114  
1115 S: Um, that sort of thing. Versus zero-hour course, there's a lot less  
1116 riding on that. Um, and so, versus in a three-hour course or a four-hour



1117 course, you know, if you, if you fail it, you have to take it again and you  
1118 have that on your GPA, et cetera. So, in that sense, it really does matter.  
1119 Uh, but if there's nothing riding on it, um, as far as, you know, what can  
1120 help you, um, the numbers that determine at least part of your success in  
1121 the future, um, because people value those numbers, um, if it doesn't  
1122 have that riding on it, then, then it, um, then failing at it can definitely  
1123 help you, you know.

1124

1125 I: Okay. So, now that we've talked through all these different ideas  
1126 related to motivation and effort and challenges, how do you summarize  
1127 what you shared with me?

1128

1129 S: That's an interesting question. How would I summarize it? Um,  
1130 overall, I think you, I would, yeah, I would say ...

1131

1132 I: Mm-hmm (affirmative).

1133

1134 S: ... I'm detail-oriented and slightly perfectionist, which means that I  
1135 care a lot about getting the details right, not just to take picture of my  
1136 assignments. Um, I do care about, uh, what other, my peers and my  
1137 professors think of me as far as me being smart. And that influences how  
1138 I, um, let's see ... What was question 16, question 16 wa- or the ones  
1139 about professors, um ...

1140

1141 I: Judging you poorly.

1142

1143 S: Judging. Judging, yeah, that influences my desire to, my desire to  
1144 learn and do well in class, even though I also had a lot of desire to  
1145 actually learn the material and learn new things overall. Um, and let's  
1146 see. I think there's a third major point that I'm missing, but, um, the  
1147 details. You see. Um, and then, like, overall, you know, I, yeah, negative

1148 feedback without actually suggestions on how you can improve is, uh,  
1149 almost worthless. And so, um, but if you get suggestions to improve,  
1150 you should definitely examine them, figure out whether they're true, and  
1151 then take them if they are. Uh, I think I've covered most everything.

1152

1153 I: Okay. Did you gain any insights from our discussion?

1154

1155 S: Um, now, I think the part, um, the part about me, um, professors and  
1156 students, uh, judging me, I think that was a little bit of an insight. Uh,  
1157 I'm, I'm a fairly introspective person. Um, so, I think, I think I was  
1158 relatively prepared for a lot of the questions.

1159

1160 I: Mm-hmm (affirmative).

1161

1162 S: Um, but the, those questions and then there's a few other ones that  
1163 were, um, relatively surprising and I definitely had to think about.

1164

1165 I: Do, do you consider this, uh, interview sort of a worthwhile way to  
1166 just evaluate yourself? Like would you do it again?

1167

1168 S: Uh, okay. Yeah. Um ...

1169

1170 I: Or recommend to someone else, perhaps?

1171

1172 S: Yeah. I tend to prefer to at least initially evaluate myself in private.

1173

1174 I: Mm-hmm (affirmative).

1175

1176 S: But then, um, but, you know, uh, I think either for someone who's less  
1177 introspective that they might be interested in, in learning more about  
1178 themselves through these questions or, um, you know, if somebody has

1179 already figured themselves out there might find something new. So,  
1180 yeah, I mean, I, I think I might do it again. I don't know, actually.

1181

1182 I: Okay. Anything else you want to share with me?

1183

1184 S: Um, no. I don't think so.

1185

1186 I: All right. Thank you.

1     **Interview Transcript 13: Mary**

2     Interviewer: Allison Adams

3     Date Interview conducted: 10/26/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Our goal today is for us to have a detailed discussion about your beliefs  
8     about perceptions of the nature of your own intelligence. The discussion  
9     will inform my understanding of the perceptions of engineering students  
10    and will help future decisions about the undergraduate engineering  
11    experience and how it can be improved for all students. I want to hear  
12    your own thoughts and perceptions. I'm expecting that they will be  
13    different from the thoughts of others. There's no right or wrong answer.  
14    Just go ahead. I aim to understand your perspective, so I'll ask questions  
15    like, what do you mean by that? And can you elaborate? These questions  
16    can end up being a little bit awkward as they require you to really reflect  
17    on your experiences. Um, I'll lead purposefully long pauses after my  
18    questions and take your time if you need clarification, let me know. Any  
19    questions? So tell me about yourself as a student?

20

21    Mary:

22    Um, as a student. So I guess, um, I like to stay busy. That's kind of my  
23    number one priority. And so for example, um, uh, I guess like I have, I  
24    think I'm in 15 or 12 credit hours this semester. And so other than that, if  
25    I'm not studying then I most likely at work. So I guess that's what I  
26    would say, as a student just I like to stay busy.

27

28    Interviewer:

29    Okay. So why do you feel the need to stay busy?

30

31    Mary:

32 Um, I think it helps me to not procrastinate as much as I would  
33 otherwise. For example, if I have free time that I think like, okay, I'm  
34 putting off doing something that I could be doing for school or work  
35 during this time too, I guess procrastinate.

36

37 Interviewer:

38 Okay. Do you feel that you're prone to proca-procrastination?

39

40 Mary:

41 I do just because like for example to like if I try and do my homework  
42 right after it's assigned, when I have like kind of like a free afternoon to  
43 work on homework, it takes me a lot longer than it would if I'm like kind  
44 of crunched for time. So I know that just even having that larger amount  
45 of time, I'm more prone to take a lot longer on the assignment where I  
46 think I get the exact same amount, like studying and learning as I do,  
47 like right after taking a lot longer as opposed to like Kinda like right  
48 before when I don't have so much time.

49

50 Interviewer:

51 Okay. What do you think your need to stay busy tells you about what  
52 kind of student you are?

53

54 Mary:

55 Um, uh, shoot. I think it might ... it could be saying that I'm a good  
56 student because I know how long ... like I know what it's gonna take me  
57 to like learn the material that I'm gonna need to know. But it also could  
58 be saying that I'm a bad student because I like to do things other than  
59 study. Like for example, I like to work a lot just to fill that extra time  
60 when I could be studying.

61

62 Interviewer:

63 Okay. Well, what does it mean to you to be a good student or a bad  
64 student?

65

66 Mary:

67 I think to be a good student, you need to spend as much time as you  
68 deem necessary to learn the material that you need to know for the  
69 course.

70

71 Interviewer:

72 Okay.

73

74 Mary:

75 Can I elaborate on that or no?

76

77 Interviewer:

78 If you have anything else to say, of course, say it.

79

80 Mary:

81 Um, I mean for like for example, like if I was ... if I ... mm-mm can I put  
82 the example together?

83

84 Interviewer:

85 Sure.

86

87 Mary:

88 So for example, if I try and stay busy just so that I don't have to spend as  
89 much time on school work as I do, like working for example, then I  
90 would consider myself a bad student because I don't set enough time  
91 aside to learn the material that I need to know.

92

93 Interviewer:

94     Okay. So would you consider yourself a good student?  
95  
96     Mary:  
97     I would say I'm kind of in the middle just because I know sometimes  
98     work does get in the way and I do work too much, and so like I guess I  
99     should spend more time studying. However, I also feel like I'm learning  
100    like in ... I guess it depends on classes, so-  
101  
102    Interviewer:  
103    Okay.  
104  
105    Mary:  
106    I would spend more time on certain classes just because I like them  
107    more for example.  
108  
109    Interviewer:  
110    Sure. It's easy to do that.  
111  
112    Mary:  
113    Yeah.  
114  
115    Interviewer:  
116    If you were in a class and you get your exams back and you look at your  
117    test and feel like you've succeeded on this test, how would you react and  
118    why?  
119  
120    Mary:  
121    I think the way I would react as I look back on the study that I did for  
122    the class or for the test and then kind of just be happy that I decided to  
123    spend that much time on it beforehand knowing that I did have a test.  
124    Yeah. And then what was the second part of that?

125

126 Interviewer:

127 Just why?

128

129 Mary:

130 Oh, why? Yeah. I guess just because, um, that way I can kind of know  
131 for future too how much I need to study for a course or like I can kind of  
132 put that into the category of how to be a student versus a student is a like  
133 kind of learn and adapt how much study you need to do for the course to  
134 know how much I need to put in to pass. I guess not just a pass but to  
135 know all the material that I need to know.

136

137 Interviewer:

138 Okay. What do you consider to be success on an exam?

139

140 Mary:

141 I guess when I learn and know the material. There is a test I took  
142 probably a couple weeks ago where I looked at the wrong table values  
143 and so because of that, I miss like 15 percent or something like that, and  
144 so I think I got maybe a 70 or something.

145

146 Interviewer:

147 Oops.

148

149 Mary:

150 Yeah. So it was like, well shoot, I could have done like I guess half of  
151 the points I missed were just because of one simple mistake, so I could  
152 have avoided that just by looking at the wrong table value. I still think I  
153 did well on tests just because of that one mistake, I missed so many  
154 extra points. So I guess it just depends on how well I know the material  
155 as opposed to my score, and I guess in some cases-



156  
157 Interviewer:  
158 So you feel like you, you did well, you just looked at the wrong table  
159 and having the wrong values-  
160  
161 Mary:  
162 Caused me to do a lot worse than-  
163  
164 Interviewer:  
165 ... it is really the issue there?  
166  
167 Mary:  
168 Mm-hmm (affirmative).  
169  
170 Interviewer:  
171 Okay. But you ... so you would say that having done the material  
172 correctly is more important than whatever score you get at the end?  
173  
174 Mary:  
175 Yes, I am saying that. However, the score is important because that's  
176 also what's helping me to get the school.  
177  
178 Interviewer:  
179 When, when it is a score, what do you consider to be a success?  
180  
181 Mary:  
182 I usually like to stick around the 90 percent range.  
183  
184 Interviewer:  
185 Who doesn't (laughing).  
186

187 Mary:  
188 But uh, yeah, I guess depends on the class too. Like for example, I took,  
189 I think it was like circuits or something like that and the whole class  
190 scored like a 60 percent range, so I was like, okay, I know as much  
191 material, material as the rest of the students in the class knows. I'm  
192 assuming that that's like the level that he taught us how to in the class.  
193 It's like that's what I thought was needed. Like that's what I reason was  
194 like the amount of material that I needed to know to succeed in the class  
195 through on the test. And so if it's kind of like around like baseline of  
196 what everyone's getting, then I would also consider that a success  
197 because that's kind of what the teacher has prepared us all for.

198

199 Interviewer:

200 Okay. So in that case you would kind of consider a grade, grade cur-

201

202 Mary:

203 Grade curve.

204

205 Interviewer:

206 Yeah. That. You consider that to sort of, uh, alter what exactly your  
207 perception of success is?

208

209 Mary:

210 Yes.

211

212 Interviewer:

213 Grade curb - I can't say that word.

214

215 Mary:

216 Grade.

217

218 Interviewer:

219 I've been having that problem for a couple months now. So what would  
220 you ... how would you react if you, um, did better than somebody that  
221 you thought was smarter than you are? Like just you happen to see their  
222 test or something?

223

224 Mary:

225 Um, I think it'd be kind of like ... I think it'd be an accomplishment just  
226 because like, I don't know, for example, whenever I'm like, I'm going to  
227 relate it back to sports because that's more like, I guess easier for me to  
228 do. But like, so your coach, um, is like preparing you for a race or  
229 something like that, and so you can fina ... like you finally beat this  
230 person who you've been like training to have the same time as, or I guess  
231 for the race. And so just knowing that you've put in enough work to do  
232 better than someone who you've like set your goal like kind of  
233 accomplish the same like sports as they have. I guess I think it would be  
234 comparable.

235

236 Interviewer:

237 Okay. How strong do you think that feeling of accomplishment would  
238 be?

239

240 Mary:

241 I think it would be strong enough to drive and need to do it again. So I  
242 mean ... yeah.

243

244 Interviewer:

245 Okay. Would you share with anyone else that you did better than that  
246 person?

247

248 Mary:

249 Probably not, just because I don't like to ... I guess boast on my scores. I  
250 usually try not to tell people my scores at all.

251

252 Interviewer:

253 Why not?

254

255 Mary:

256 Um, just because like ... I guess it depends on the class but my grades  
257 like fluctuate so some like classes I do really well and then some I don't  
258 do as well. And so I don't know, it's just, I don't ... I guess I don't want  
259 my perception or like their perception of me to just ... I don't know, like,  
260 not be degraded, but I don't want them to think of me is like not doing  
261 well in school.

262

263 Interviewer:

264 Okay. So what if you did not quite succeed on an exam, how would you  
265 react to that and why?

266

267 Mary:

268 Um, I think the ... well I guess in the past the way that I've reacted is I've  
269 looked through the test and if we're provided with the answers, I usually  
270 go through and see like for example what I did wrong. And then if it is a  
271 case where I like missed a number or like looked at the wrong table  
272 value, then I'll usually go talk to the teacher or if we get regrades then  
273 I'll mention that just to kind of like see if there's-

274

275 Interviewer:

276 Or like correct and then get half of your points back?

277

278 Mary:

279 Mm-hmm (affirmative).

280

281 Interviewer:

282 That thing. Okay.

283

284 Mary:

285 Yeah. Then I'll like Kinda write it out like this is what happened, this is

286 like why it happened. And so I kind of try to I guess show that I learned

287 from the mistake and that also I recognize that I can make a mistake.

288 And so I guess yeah, and then other than that just kind of accept the

289 grade because there's nothing you can do about it after you kind of learn

290 the material or learn what you missed on the test.

291

292 Interviewer:

293 Okay. What have you found out, like maybe the professor put a, a score,

294 score, a statistic plot or something up and you find out that the rest of the

295 class did quite a bit better than you did on that test?

296

297 Mary:

298 Mm-hmm (affirmative). Um, that's kind of another case where I

299 probably won't share my score just because I don't usually, and then I'll

300 just work harder for the next one. That's Kinda like where it comes into

301 play with that like athlete in the race thing, so like I can set that as my

302 goal for the next time. Like, okay, I don't want to not be at like at least

303 the average hopefully. So I'll try and set my goal to be like getting a

304 good enough, like a better score I guess to kind of match the class.

305

306 Interviewer:

307 Okay. What if somebody that you didn't consider it to be as smart as you

308 are do better than you?

309

310 Mary:

311 Uh, I mean it's happened before. I think I, for example, I used to get all  
312 A's pretty much in classes, and then I guess once I started working more,  
313 my grades went down just a little bit. And so all these people who had  
314 been previously asking me for help on homework and stuff, they were  
315 like starting to score as good as me or better on like tests and stuff like  
316 that. And so I kinda just ... I attributed to working more. I'm assuming  
317 that's what the problem is. But also, um, I just, I think the way I'm  
318 managing my time is I'm happy with how I'm doing. So someone like,  
319 for example, who had scored as good as me or as good as me on the test  
320 would do better than I'd kind of like ... I would accept that like either  
321 they just had a really good test day or that they've put in the work  
322 necessary just for better than the test.

323

324 Interviewer:

325 Okay. Would you share with anyone else that they did better than you  
326 did, even without showing your score?

327

328 Mary:

329 Again, um, probably not just because then I, I feel like I would have to  
330 share my score. If I did tell them that I did better, they'd be like, "Okay,  
331 what'd you get?" And then, I don't know.

332

333 Interviewer:

334 Do, do you think you'd be more likely to share a score that was a good  
335 score or a bad score on an exam with someone else?

336

337 Mary:

338 Most likely a good score because obviously I'd be proud of myself for  
339 accomplishing it. Um-

340

341 Interviewer:

342 Who might you share it with?

343

344 Mary:

345 Um, I'd probably tell my roommate, who's a student in business, so he'd  
346 probably wouldn't really completely understand. But, um ... and then I  
347 guess ... I don't know if I ... I don't really have classes with many of my,  
348 like my, like friend group friends, do you know what I mean?

349

350 Interviewer:

351 Mm-hmm (affirmative).

352

353 Mary:

354 So if I did well I'd maybe tell them that again, I don't really know.

355

356 Interviewer:

357 So you might, but you probably wouldn't tell them, is that what you're  
358 saying? Okay. So does it matter to you if your peers think you're smart?

359

360 Mary:

361 I mean in a sense. I don't want to like come across as a friend who's  
362 always asking for help and like only just asking, you know, I'd like to  
363 also be able to be proactive and help them too when they need help. And  
364 so for them to I guess know or think that I know the material enough to  
365 come ask if I would be able to help them is I think good.

366

367 Interviewer:

368 So are you saying that you're just always preferred to be giving help  
369 rather than receiving it?

370

371 Mary:

372 Um, I think that depends like on class, the class or what we're working

373 on. Like for example, I know that I have um ... I like lack the  
374 knowledge, I guess I don't like the materials we have them on a  
375 computer. But to do this FEA are you, yeah, you're mechanical, right?

376

377 Interviewer:

378 Mm-hmm (affirmative).

379

380 Mary:

381 So like FEA on the computers is a class that I haven't taken, so I know  
382 that I don't know how to do that because I haven't taken the class yet.

383 And so my buddy Jacob does know how to do it, so I've like gone to him  
384 and asked him for help in that sense. But then for other classes, for  
385 example, like in heat transfer, I have friends who come to ask me for  
386 help. So it just kinda depends on what the classes are.

387

388 Interviewer:

389 So are you okay with more of a system of people tend to give and take  
390 equally as far as help goes?

391

392 Mary:

393 Um, I like to have my give and take mostly equal or give more just  
394 because, um, I don't like to be like reliant upon someone or anything.

395 And so I think it is good to have a balance. I feel like it's not good to be  
396 always just asking for help just because, um, I guess it depends like for  
397 example, if you go to a tutor all the time or you're like usually doing is  
398 asking for help, they usually don't ask you for anything so-

399

400 Interviewer:

401 Sure.

402

403 Mary:



404 It depends on I guess the relationship between the peers. It's like  
405 between a student and the tutor for example, it'd be mostly just asking,  
406 but then like between friends, I think it would be ... it's good for the  
407 relationship to like both give and received.

408

409 Interviewer:

410 Okay. So do you care if your professors think you're smart?

411

412 Mary:

413 I think that ... I mean obviously I would want them to think I'm smart.  
414 However, I think that they're like basis for judging that is on our grades  
415 that you receive in the class and not by how well we can, I guess, uh, I  
416 guess it would be applying the knowledge. Um, like for example, if they  
417 gave a test that has all like half of the material from the course and like  
418 that's the half you didn't study but you studied the exact other half, then  
419 they're going to judge you based on all of that material just based on that  
420 test. And so it's going to kind of like degrade how their vision of you as  
421 like a smart person. Whereas you, I guess, knew half the material,  
422 although you didn't get like the grade, I guess, you would think you  
423 deserve in the class or the material. Um, so I think yes, it is important for  
424 them to think, I guess, that their students are smart, but I think that the  
425 way that they would judge that is like off of grades and I don't think  
426 that's a very accurate-

427

428 Interviewer:

429 Okay. So rather than just students in general, do you care if they think  
430 that you were smart?

431

432 Mary:

433 Um, I mean, yes, I want them to think I'm smart.

434

435 Interviewer:  
436 Why?  
437  
438 Mary:  
439 (Laughs) um, just because um, I guess I want, I don't know, like I want  
440 to think I'm smart, um, and so I want them to think of me the same way  
441 as I think of myself and if I like I guess view myself as not being smart  
442 then I would probably try and do something about that to be smart.  
443  
444 Interviewer:  
445 Okay.  
446  
447 Mary:  
448 Does that make sense?  
449  
450 Interviewer:  
451 You would try to prove yourself if you felt like you were being  
452 underestimated.  
453  
454 Mary:  
455 Mm-hmm (affirmative).  
456  
457 Interviewer:  
458 Okay. So what about the [stammer] Sorry. What motivates you to keep  
459 pursuing an engineering degree?  
460  
461 Mary:  
462 Oof... I'm already three years in (laughs) yikes.  
463  
464 Interviewer:  
465 You're not wrong about that.

466

467 Mary:

468 Yeah. I thought ... I think it was still freshman year I was in ... I was  
469 going to be in general but then I was like, I don't want to waste money to  
470 take a general class if I can just take like the mechanical intro class and  
471 then see if I like it and if not then I'll, I guess maybe see if I have a better  
472 idea of what I want to do after that. And then if I decided to do  
473 mechanical, then I won't have to take the 101 class after the general  
474 class. And so I took ME 101 class and then by that time I was already  
475 like, I've already paid for this course and I'm already like in the  
476 enrollment and all kinds of stuff, so I think I would have switched to  
477 architectural. So like that was kind of one of the kickers. But then I  
478 guess the school kept going. I didn't like ... most of the classes I didn't  
479 really enjoy, especially like the machine design and mechanics and  
480 materials. And so I don't know if it's just like the money that I've already  
481 put into the program that's keeping me going in this curriculum, but-

482

483 Interviewer:

484 Do you, do you feel trapped at all?

485

486 Mary:

487 Um, financially kinda. Like I wouldn't, I don't know, if I could get a full,  
488 like full tuition scholarship and like money to do it all over again, I  
489 would, I wouldn't go through the schooling for mechanical again, that's  
490 for sure because it's been a struggle. But I don't know what else I would  
491 do either. And it's Kinda ... like if I could have the money now to go do  
492 something else, I don't know what I would choose to do. So like in a  
493 way, yes, but also I just don't know what I'm going to do yet. So.

494

495 Interviewer:

496 Okay. So if you were to make a pie chart of your motivations to study

497 and learn, what percent would you say you were motivated by your  
498 grades versus your desire to learn the subject matter?

499

500 Mary:

501 That depends on the class for sure.

502

503 Interviewer:

504 Sure.

505

506 Mary:

507 Like for example, like machine design or like mech and materials that I  
508 mentioned earlier, it was a lot higher of like a percentage just to get a  
509 good grade as opposed to learn the material just because it's not really  
510 what interested in. Whereas like heat transfer and I'm taking a class on  
511 thermal modeling, those I'm like really interested in learning the material  
512 and so it's taking me a lot longer to, I guess, get my homework in just  
513 because I'm focusing on learning the material so much more. And so my  
514 grades aren't as big of a, like, push to or on the pie chart I guess, as  
515 opposed to learning the material.

516

517 Interviewer:

518 Okay. So why do you feel that it changes between classes of interest and  
519 non-interest?

520

521 Mary:

522 Um, I think it changes because, I'm ... if I'm interested in the subject,  
523 then most likely I'll want to know the material better and like carry it on  
524 to something that I'm gonna apply in, apply to in the job. As opposed to  
525 if I learn the material really well for them, it's gonna take a lot longer.  
526 And I think it's not something that I'm gonna apply once I graduate, so  
527 it's not something I really need to know long term.

528

529 Interviewer:

530 Okay. So in what ways are your grades important to you?

531

532 Mary:

533 Um, I guess my grades are important. In fact, I did have scholarship

534 until last semester, my grade GPA went down to three point o or so

535 unfortunately, but at least I only have this one year left, so wasn't too big

536 of a kicker. But um, so that was one driver for getting good grades, just

537 to keep my GPA up. However, now and like ... I just, I still have the like

538 internal, like internal motivation just to try and keep my GPA as high as

539 possible. However, it's not like, uh, I need to keep my GPA at 3.5

540 anymore. So, um, other than that, I don't know, I was just trying to keep

541 good grades. Why? Uh, I don't really know.

542

543 Interviewer:

544 Okay. Do you think it might have something to do with like trying to

545 impress a future boss or just feeling that you need to have them for some

546 purpose?

547

548 Mary:

549 I guess in some way, well ... as I was saying, in some ways the grade is

550 an accurate representation of how much you've learned in the course.

551 However, it's also not, so I don't really know.

552

553 Interviewer:

554 Maybe it's just kind of something you've learned to be important

555 because-

556

557 Mary:

558 Because it was...

559

560 Interviewer:

561 Adults.

562

563 Mary:

564 Yeah, whenever I was like all through middle school and high school,

565 it's always like my parents are like, okay, like you better get your grades

566 up, like what are you doing.

567

568 Interviewer:

569 Okay.

570

571 Mary:

572 And so it's always been kinda like just something I've like kind of ... it's

573 like ingrained that I should get good grades in my classes.

574

575 Interviewer:

576 Okay. In what ways is learning important to you?

577

578 Mary:

579 Um, I think learning is more important. It's ... like learning as opposed to

580 applying the skills, I think there are a lot different, so learning is really

581 important because, um, geez, I'm trying to formulate what the ... what

582 I'm thinking. So applying the information, I'm gonna start with that.

583 Applying information I think is really important because that takes it

584 from like the learning aspect in school to like in a job. And so I think

585 that's really important. And then learning the material well will help you

586 to apply it. Does that make sense?

587

588 Interviewer:

589 I think so.

590

591 Mary:

592 So if I don't learn the material well then I won't be able to apply in the  
593 future.

594

595 Interviewer:

596 Okay.

597

598 Mary:

599 So that's why learning is important.

600

601 Interviewer:

602 Let's say you're enrolling for classes next semester and there's something  
603 you need to take, and you see that there's two lecture times available,  
604 both of them are good with your schedule, but on top are different  
605 teachers. You know both these teachers by reputation and so one of  
606 them you know that you're going to have to really work hard to get a  
607 good grade in that class, but you're going to have ... but you're gonna  
608 come out feeling like you've learned a lot about that subject. Let's call  
609 that one professor A. Professor B, you won't need to work quite as hard  
610 to keep your grade up, but the rumor is that you probably just won't  
611 learn as much in his class. Which one would you enroll in?

612

613 Mary:

614 So that depends, I think, too on what class it is. For example, um,  
615 whenever I took statics here it was Kinda like a professor B type of  
616 situation, I didn't learn very much, and like I went to the tutor and that's  
617 where I learned a lot and material actually. But um, like the grades just  
618 came super easy so it wasn't like very difficult but then that lead into  
619 like materials and seen--er machine designs, so maybe that's one of the  
620 reasons I don't like this as much. But um, so those classes were a lot

621 more difficult because I didn't learn as much in the first class, whereas if  
622 it was like a class where I wasn't interested in the material, then maybe I  
623 would just say like, okay, I'm fine with taking your professor B type of  
624 class. And then like another, I guess example was I had Dr. [name] for  
625 thermo one, and I mean there was a lot of work, like you had to  
626 obviously put in the ... like a good amount of work for the homework  
627 and for studying, but I learned so much in that class and so it was really  
628 cool just to kind of see how, like you see a problem, you're like, okay, I  
629 actually know how to start that and I know what to assume for this, like  
630 everything. And so I think it's cool just to see that you can work through  
631 an entire problem. So like I guess if it's something that I'm interested in,  
632 then I'm not opposed to taking a higher, I guess, or a bigger workload  
633 class to learn the material.

634

635 Interviewer:

636 Okay. Uh, you also mentioned thinking about like is it gonna feed into  
637 later classes, which do you think would be more motivating, I guess, to  
638 you, would be it's a subject you're interested in or the ... is this a subject  
639 that's going to feed into something later and I might suffer later for it?

640

641 Mary:

642 Which one is more important?

643

644 Interviewer:

645 Mm-hmm (affirmative).

646

647 Mary:

648 Um, I think in both cases I would probably take one with professor A,  
649 but...

650

651 Interviewer:



652 Sure.  
653  
654 Mary:  
655 I think I would also have to gauge it by the workload that I was already  
656 expecting for that semester too. Um  
657  
658 Interviewer:  
659 So you might take professor B if you knew that you had several other  
660 really hard classes that semester?  
661  
662 Mary:  
663 Mm-hmm (affirmative).  
664  
665 Interviewer:  
666 Okay.  
667  
668 Mary:  
669 Yes. I think it would. But then also it kind of depends, I guess, on how  
670 much it's going to affect me in the future or if it's like a subject of  
671 interest where I want to know the material.  
672  
673 Interviewer:  
674 Mm-hmm (affirmative).  
675  
676 Mary:  
677 Which is what the question is, I just realized that. Oh shoot. So like if I  
678 had to pick professor A but wanting to be for another, is that kind of?  
679  
680 Interviewer:  
681 Sure, if maybe there's two classes that you're taking and they're kind of  
682 just ... you can do one of each on either of them.

683

684 Mary:

685 Okay. I'm trying to like set that up so that I have to choose. Um, I think I  
686 would probably rather take the harder professor for the one that I'm  
687 interested in just because I know that ... like I was saying with my study  
688 habits earlier, I'm more apt to spend more time studying for something  
689 that I actually enjoy as opposed to not. And so I think I would put in the  
690 right amount of work to learn the material to get like a decent grade in  
691 the class or to like, yeah, to show that I know the material as opposed to  
692 struggling extra hard in the, I guess, course that is leading onto another  
693 course because then I would just get extra frustrated and then not enjoy  
694 it whatsoever.

695

696 Interviewer:

697 Okay. Tell me about your learning and studying strategies?

698

699 Mary:

700 Um, to be honest, I learn a lot in the material just right before the test. I  
701 know that's kind of the worst way to do it, but um, when I'm going  
702 through the homework I try and learn as much as I can. I don't usually  
703 get 100 percent on my homework just because I struggle a lot. And I  
704 should go ask for help, but I guess the hours don't really line up very  
705 well. So I think I struggle enough on the homework to where I know like  
706 ... like I have a general knowing like what the material is and then, um,  
707 like for heat transfer for example, um, the solutions get posted the next  
708 day, so, right, like maybe an hour or two after class I can go back and  
709 look like also kind of refresh my brain like okay, this is what I did right,  
710 this is what I did wrong, and this is kind of where I should have gone  
711 with the problem. What was the question again?

712

713 Interviewer:

714 Your learning and study strategies.

715

716 Mary:

717 Oh, yeah. Thank you. So yeah, I try and study, like while I'm doing the  
718 homework, but I usually don't put in any like study time to like I guess  
719 besides looking at the homework solutions, which I guess is kind of  
720 studying. Um, and then timing wise, I kind of just do it here and there  
721 whenever I have time. Like for example, um, I just work at random  
722 hours of the day too. So between, like those little hours I just kinda like,  
723 oh, I have like two hours here, I'll just go home do my material design  
724 homework or something. So the timing kind of is just everywhere or like  
725 I take naps too so I can stay up late and finish the homework if I need to.  
726 So I guess timing really isn't an issue, I usually do things like right  
727 before they're due also because then again I don't have to be like  
728 procrastination, take a long time for the homework type thing. It's very  
729 sporadic, not really a system.

730

731 Interviewer:

732 So how has that sort of not quite strategy come, come into use?

733

734 Mary:

735 Um, I think it's helpful because it allows me to, I guess have jobs and  
736 like do different things and go and, I guess, just do random things that I  
737 want to, and then I still know that I have like sometime somewhere to  
738 work on the homework. That's also a kicker because then like sometimes  
739 you just stay up super late working on homework just because you like  
740 didn't have a set time when you're going to sit down and do it. So, um,  
741 yeah.

742

743 Interviewer:

744 Okay. However, um, sort of, sort of strategies changed over time?

745

746 Mary:

747 Um, I think it's gotten more like sporadic and at random times just as the  
748 year, like as the years have been since freshman year because freshman  
749 year I lived in the dorms, and so I was on campus, it didn't take as long  
750 to get to and from classes. And I had the debt or like the daily meal plan  
751 deal, so didn't have to like cook or worry about food or anything like  
752 that and I don't think I worked either. I had a job in the fall but other  
753 than that I just had a lot of extra free time to be working on homework  
754 and studying. So it was Kinda more like smooshed together during the  
755 day and then as the years have gone I've gotten, I get like a new job  
756 every year and they just keep adding on. And so-

757

758 Interviewer:

759 How many jobs are you working?

760

761 Mary:

762 Like now I have three kind of four in the fall. But they're just like  
763 random times.

764

765 Interviewer:

766 Okay.

767

768 Mary:

769 So it just kinda depends ... I mean yeah. So as, as time has passed I like,  
770 I get more jobs in like an hour here, an hour there, like they like varies  
771 all the time, just be switching.

772

773 Interviewer:

774 Okay. Have you felt the need to study more as you get older?

775

776 Mary:

777 Uh, I don't think so. I think in high school I developed like I guess like I  
778 learned how I learn better, which is like by doing the homework and like  
779 trying to understand it while I'm doing it as opposed to like, I guess ... I  
780 don't know what else, how else people study usually. But yeah, I try and  
781 learn as much as I can from the homeworks, and so I guess I've been  
782 doing that. And then I just study the day or two before a test maybe  
783 before and not very often, but I think that's pretty much what I've been  
784 doing for the past couple years. So.

785

786 Interviewer:

787 Okay. In general, how much effort do you feel that you put into your  
788 classes?

789

790 Mary:

791 Um, I think effort if you ... like if you determine that timeline, I put in  
792 less now than I did freshman year just because I like I'm still learning  
793 how I learn. I guess I might put in more time on homework. I guess it  
794 depends on the class, but I think um, time wise, like I learned that if I  
795 stayed busy then I'll spend less time like procrastinating. I guess I'm  
796 doing my homework and so like the hours I think I've probably gone  
797 down for how much time they spend on homework just because I know  
798 that like this is how much time I have to do homework at a specific time.  
799 So I think um, I've effort thinking wise, I think I came into college with  
800 like really good base knowledge of like for example, calculus and I don't  
801 know what other classes I took, I guess English. I had to take English  
802 class I think. So I think like my base knowledge from those was really  
803 good so I didn't have to work as hard just like in those initial years to  
804 kind of know what, like, how to get into the full swing of college, you  
805 know, how it's different.

806

807 Interviewer:

808 Mm-hmm (affirmative).

809

810 Mary:

811 Cos I think like high school really prepared me for that. And then um,

812 yeah I guess just being in full swing and just to translate, I feel like I

813 give the same amount of effort if maybe not less on school because I like

814 give some of my effort towards like working and things like that.

815

816 Interviewer:

817 Okay. Do you feel like you learn more from classes that you have to put

818 a lot of effort into?

819

820 Mary:

821 I think I learned more in classes that I enjoy as opposed to learning how

822 much effort I put in because some classes come more effortlessly. Like

823 if I ... like for example like out there, back to thermo with Dr. [name],

824 the way that he taught the class was just really like suited toward like

825 how I learn. For example, he would make the connections for us in class

826 and so I wouldn't have to put in extra time outside of class to like put

827 together a connection of like how this goes with that point over here.

828 You'd get like whenever he's going to lecture you would say like this

829 and then like remember back when we did this. Like this is how like ...

830 these are the two equations like this is how similar they are, like you can

831 use this when this happens and this when this happens. So he like clearly

832 defined that for us instead of just going with the new material. And then

833 you're kinda like, oh maybe there was something about that that we

834 learned before, but then like, there's, there isn't like refresher kind of-

835

836 Interviewer:

837 Okay. So kinda like your, your brain just learns things better when it has

838 an already existing node or whatever to connect to, and he would make  
839 that connection for you and point you at the right node?  
840  
841 Mary:  
842 Mm-hmm (affirmative). Or yeah, he would like ... So like if we're going  
843 through an example and it's like ... I'm trying to think of a good example.  
844 Like for example like  $c$  sub  $p$  and  $c$  sub  $b$  like he would go through it  
845 and he would say, bring  $c$  sub  $b$  because this. And then he'd say and then  
846 like for example, over here like ... in this old example, you use  $c$  sub  $b$   
847 because of this. So like now you like you, like you've seen both of them  
848 at the same time together to know like how to compare them as opposed  
849 to like this is  $c$  sub  $p$ , you can use it when this. And then you're like  
850 what's  $c$  sub  $p$  again? I don't know. What I mean?  
851  
852 Interviewer:  
853 Okay.  
854  
855 Mary:  
856 So it's like bringing back an old concept that's pretty identical, but it's  
857 using a different case, you know what I mean?  
858  
859 Interviewer:  
860 I think so, yeah.  
861  
862 Mary:  
863 So it was just ... it's just helpful that like now I don't have to spend I  
864 guess five or 10 minutes going and looking for this information and then  
865 trying to figure it out again, whereas he can just tell us in like 10 seconds  
866 and it's like, okay, connection made, then I can spend that much less  
867 time on my homework now.  
868

869 Interviewer:

870 Okay.

871

872 Mary:

873 Cos I feel like I don't have to put in as much effort but I learned it so

874 easily.

875

876 Interviewer:

877 So would you say sometimes you learn more and just because it's taught

878 better?

879

880 Mary:

881 I think yes. If like the teacher can put connections together for you

882 without you having to spend an extra time or like if I didn't even know

883 that I had to go make a connection, then it's like, oh, it's already made

884 for me. You know what I mean?

885

886 Interviewer:

887 Mm-hmm (affirmative).

888

889 Mary:

890 And so the teacher can help give you that information and not leave us

891 like not even knowing if that's something that we need to do, I think

892 that's really helpful.

893

894 Interviewer:

895 Okay. So do you think maybe the amount of effort you need to spend on

896 the class isn't always related to how much you learned in it?

897

898 Mary:

899 Yes. I don't think that they're related.



900

901 Interviewer:

902 Okay.

903

904 Mary:

905 Like for example, I didn't put a whole lot of effort into thermo and I  
906 learned so much.

907

908 Interviewer:

909 So basically it's more related to a, how it's taught and what connections  
910 upon existing knowledge are made and how interested you are in a  
911 subject?

912

913 Mary:

914 Mm-hmm (affirmative).

915

916 Interviewer:

917 Okay. Do you feel like you put more or less effort into your classes as  
918 compared to your peers?

919

920 Mary:

921 Um, I don't know. I don't know how much my peers study. I tend to  
922 study on my own. Like I said, with my weird like schedule I don't really,  
923 I don't, I don't know how much my peer study.

924

925 Interviewer:

926 Okay.

927

928 Mary:

929 And I also like our flow charts got off schedule, so I don't know, like I  
930 don't have many classes with any of my friends so-

931  
932 Interviewer:  
933 Okay.  
934  
935 Mary:  
936 ... I haven't really related how much time we spend on studying to each  
937 other.  
938  
939 Interviewer:  
940 So you just don't know?  
941  
942 Mary:  
943 No. I have no idea.  
944  
945 Interviewer:  
946 Okay. Now, think about a subject or a class that you took and you had to  
947 put in a lot of effort to succeed and tell me about it.  
948  
949 Mary:  
950 Um, maybe a machine design that class I, I don't know if I would  
951 consider it succeeding because I didn't learn very much in there but I had  
952 to put in a lot of effort to at least get to where I was. Like I still, I think I  
953 was at probably below average on the final score for the class, but I  
954 definitely ... I put in a lot of effort but I just, I just could succeed for  
955 some reason. Okay. Yeah. Which really sucked because I don't know, I  
956 like to succeed obviously. But-  
957  
958 Interviewer:  
959 Are there any classes where you did succeed but you had a lot, had to  
960 put a lot of effort in?  
961

962 Mary:  
963 Um, I guess maybe uh, that econ class, you know the one, like I miss  
964 missing 5:30 or something.  
965  
966 Interviewer:  
967 I haven't myself taken it.  
968  
969 Mary:  
970 But did you go undergrad here?  
971  
972 Interviewer:  
973 Yes, but in the mathematics.  
974  
975 Mary:  
976 Uh, never mind. But yeah, we have to take some type of econ class, like  
977 engineering econ analysis I think. I had to put in a lot of effort just  
978 because it was, it's not something that we typically look like ... it's not  
979 like a typical engineering class. I feel like it's ... like the thinking is ...  
980 like the thought processes and stuff are just a lot different. So like trying  
981 to put your mindset into that is a lot different. And so I had to study a  
982 lot. And then we had a project that we had to like design, like basically  
983 an Uber Company, and so that required a lot of thought because like  
984 there's so many different variables that I just keep, you just keep, it's like  
985 a chain, like you can never fulfill the end of it, so-  
986  
987 Interviewer:  
988 An infinite chain.  
989  
990 Mary:  
991 Yeah. An infinite chain. It's awful. So I put in a lot of effort just to kind  
992 of learn about that I think I ... I think I exceeded because I learned quite

993 a bit, but it took a lot of time.

994

995 Interviewer:

996 Okay. How did you feel about needing to put so much effort into those  
997 two classes?

998

999 Mary:

1000 Um, it wasn't, I didn't like it a whole lot just because I usually like, I  
1001 don't know, I don't like to, I guess, struggle with classes. I like it when  
1002 like obviously the knowledge comes easy and like doesn't take a lot of  
1003 effort to learn. So it just kind of tough to struggle through classes and  
1004 then I guess especially in machine design because I don't think I  
1005 succeeded very much. So-

1006

1007 Interviewer:

1008 Okay. What did you get out of those experiences?

1009

1010 Mary:

1011 Uh, I learned for sure that I don't like the struggle in classes. I was gonna  
1012 say, it... taught me like how not to study, kind of, but I don't really  
1013 remember how I studied those. I mean obviously just by the homeworks,  
1014 but I think on those ... again, like I said, I usually don't get 100 percent  
1015 on homework, but I think those I struggled with so much to the point  
1016 where it was frustrating that I just couldn't figure out the information,  
1017 so... I probably should have gone and asked for help more than I did. But  
1018 yeah, I don't like to struggle in classes.

1019

1020 Interviewer:

1021 Okay. Now think about some class or subject where you were able to  
1022 succeed with very little effort at all. Tell me what was that like?

1023

1024 Mary:  
1025 I'd say probably thermo for me. And I like, I really enjoyed it and so for  
1026 example now I'm taking thermo two. And so like I kinda made it so that  
1027 I enjoy it even more than I think I probably would have just because it  
1028 was like, okay, I actually understand this, like this is kind of cool. Like I  
1029 said, I can see this problem and like know how to work through the  
1030 problem, like draw it out, write the assumptions and like work through  
1031 the entire problem without an issue. So it was just kinda cool. Like even  
1032 now still I can like think through the problems that we'd gone through  
1033 and just is cool too. It's not dependent on a lot of effort. But I have like, I  
1034 guess again, those connections already made for me.

1035  
1036 Interviewer:  
1037 Yeah. Would you say that you still remember that stuff pretty well?

1038  
1039 Mary:  
1040 I think for the most part it.

1041  
1042 Interviewer:  
1043 Okay. How did you feel about not needing to put much effort in that  
1044 class?

1045  
1046 Mary:  
1047 It was nice because then I could put my time somewhere else into  
1048 another class. For example, I think I took both of those senior just ... or  
1049 in thermo and machine design at the same time. So all the struggling that  
1050 I didn't have to do on thermo, I could spend struggling with-

1051  
1052 Interviewer:  
1053 Machine design?

1054

1055 Mary:  
1056 Mm-hmm (affirmative) .  
1057  
1058 Interviewer:  
1059 Okay. What did you get out of that experience?  
1060  
1061 Mary:  
1062 The Thermo?  
1063  
1064 Interviewer:  
1065 Mm-hmm (affirmative).  
1066  
1067 Mary:  
1068 Um, it taught me that I learned best by like how those connections are  
1069 being made for me. Um, I guess I kind of learned to like if they're not  
1070 made for me then I can go look for them. However, I just need to know  
1071 that there is something there to look for in the beginning. Um, and I  
1072 guess like compartmentalizing is something that I like to do, like put  
1073 everything, like that's what this subject or I guess like not subject but  
1074 like topic here and then like separate the topics and know what to do for  
1075 each one is helpful. So I kind of learned a little bit more like about just  
1076 how I learn how I can like succeed.  
1077  
1078 Interviewer:  
1079 Okay. Now think about a student, you know, who puts in a lot of effort  
1080 to succeed. Like they're, they're doing well and everything, but every  
1081 time you see them there ... no, I can't play, I got to study. Um, what does  
1082 that tell you about how smart that student is?  
1083  
1084 Mary:  
1085 Um, I guess it depends because I think being smart doesn't just rely on

1086 your grades and how well you do, but also how well you can manage  
1087 your time and how like manage your interests. So for example, if they're  
1088 interested in something like sewing for example, and they don't spend  
1089 enough time sewing, if they would like to, then I think like spending  
1090 more time, like I guess, I guess managing time better so that you have  
1091 more time to do things that you enjoy.

1092

1093 Interviewer:

1094 Okay. And then think about a student you know who doesn't need to put  
1095 in a lot of effort to succeed, they're just sort of winging it and acing it.  
1096 What does that tell you about how smart they are?

1097

1098 Mary:

1099 Um, I don't want to say that just automatically means they're smart  
1100 because I think that maybe they still don't have those time management  
1101 skills because like they don't have to struggle with trying to find time to  
1102 do like that extracurricular thing that they like to do. And so I guess it all  
1103 just kind of depends on ... I think, I guess, I'm saying that it relies on  
1104 your time management skills to be smart. That's what I'm saying.

1105

1106 Interviewer:

1107 So do you think ... what do you think about maybe a student who puts in  
1108 more or less a medium amount of effort to succeed, but they don't just  
1109 wing it but they don't quite spend all their time at it either?

1110

1111 Mary:

1112 They're still succeeding as long as they can, I guess, manage their time  
1113 enough to put in enough effort that they think that they are succeeding in  
1114 the class and still be able to do like other things besides just study. Do  
1115 you know what I mean. I understand sometimes like there's like waves  
1116 or like sometimes it's like, oh gosh, I really just need to study for this

1117 and you spend a lot of time studying. But um, I don't think that's how it  
1118 should be.

1119

1120 Interviewer:

1121 Okay. Now, tell me about a specific time when you received feedback  
1122 that you were not performing to expectation, it can be a class, a job or  
1123 relationship, whatever?

1124

1125 Mary:

1126 Um, yes, there was a time in the summer I worked at boy scout camp as  
1127 a mountain guide and there was one time when on the schedule it was  
1128 like we were supposed to take two troops, but the numbers got mixed  
1129 up-

1130

1131 Interviewer:

1132 Oh no.

1133

1134 Mary:

1135 ... and so we went, we like to started, we left in these vans to take one of  
1136 the trips out to this climbing place that we were going to and we left one  
1137 of the troops behind because we had all the, we had a head count of how  
1138 many people we knew we needed but we didn't have like the two troops  
1139 because like the numbers again just got mixed up on the white board-

1140

1141 Interviewer:

1142 Oh no....

1143

1144 Mary:

1145 And so we showed up and then this other van ... so we stopped to get gas  
1146 on the way there, and then once we got there, another van pulled up right  
1147 beside us and I realized like that is the troop that is from our camp, like



1148 oh my gosh. And so, um, yeah, getting feedback on how I should have  
1149 handled that situation. That was, that was awful. I uh, like I knew ... like  
1150 I know customer service is like number one pretty much, so again first  
1151 thing I did was just like apologize and let them know what's gonna  
1152 happen again and stuff, but whenever I got back to camp, like yes, I  
1153 admitted that I made the mistake and Kinda like knew what I was in for.  
1154 And so the feedback wasn't I guess as harse as, as, as-

1155

1156 Interviewer:

1157 Harsh.

1158

1159 Mary:

1160 Yeah, harsh as it should have been. But I didn't like receiving the-

1161

1162 Interviewer:

1163 That's fair. So how did you respond to that situation?

1164

1165 Mary:

1166 Um, my response was just to not let myself do that again. It's just like  
1167 Kinda, I kinda had a thought like before we left, but like there was  
1168 something wrong but I didn't know what it was. And so I guess like from  
1169 then on, I think that was the third weekend, just like double checked  
1170 more often or I was more sure of my decisions before I like put them in  
1171 action.

1172

1173 Interviewer:

1174 Maybe listen to your gut a little better? So what was the outcome of your  
1175 response?

1176

1177 Mary:

1178 Um, so to listen to my gut a little bit more?

1179

1180 Interviewer:

1181 To listen to your gut to double check things, etc. Everything you did.

1182

1183 Mary:

1184 Yeah. So I didn't forget any other troops for the rest of the summer, so

1185 that was good. And then I had that troop later that week on a two day

1186 traveling trip so I took them hiking for two days of a mountain and like

1187 kind of redeemed myself. So it all worked out. Thank goodness.

1188

1189 Interviewer:

1190 What advice would you give to someone struggling with a similar

1191 situation?

1192

1193 Mary:

1194 I would say I know it takes extra time to double check, but if it's gonna,

1195 I guess, if that's what you need to do to your job, then I'd say go for it

1196 includes. Like for example you could have taken an extra, it takes like

1197 10 minutes to run up the hill to check the whiteboard, so that was kind of

1198 another reason why I don't think I wanted to do it.

1199

1200 Interviewer:

1201 I can relate to that particular bit. I went on a mission trip and someone

1202 flipped my counter when they got back on the bus and I was the last

1203 person in line for the bathroom, they left me in the gas station in the

1204 middle of nowhere before I owned a cell phone-

1205

1206 Mary:

1207 Oh, no.

1208

1209 Interviewer:

1210 And my book of phone numbers was on the bus.  
1211  
1212 Mary:  
1213 Oh, no.  
1214  
1215 Interviewer:  
1216 I just lucky that someone looked out the window and saw the crazy girl  
1217 running after the bus waving her arms.  
1218  
1219 Mary:  
1220 Oh dang... No ours was like we left them at camp. So like they were like  
1221 at their cabin, it's like they had full electricity...  
1222  
1223 Interviewer:  
1224 They were fine, just inconvenienced.  
1225  
1226 Mary:  
1227 Yep.  
1228  
1229 Interviewer:  
1230 Yeah. Do you care if your peers judge you when you do poorly?  
1231  
1232 Mary:  
1233 Obviously I don't like them to judge me when I do poorly just because I  
1234 do make mistakes and I hope that they understand that Like I guess  
1235 everyone makes mistakes in it and as long as you learn from it then I  
1236 think it should be fine. So I obviously don't want them to judge me but I  
1237 understand it's like human nature to judge kind of a little bit so I guess as  
1238 long as they recognize also then trying to I guess redeem myself from  
1239 that should be fun-  
1240

1241 Interviewer:  
1242 So why do you care if they judge you?  
1243  
1244 Mary:  
1245 Just because I don't want them to have a negative perception of me. You  
1246 know, so like for example, I think if obviously if your friends have  
1247 negative perceptions of you either going to like stop coming around or  
1248 like not I guess be friends as much as they were before, so, I guess for  
1249 them to have a positive perception, I think is good.  
1250  
1251 Interviewer:  
1252 Okay. What about your professors? Do you care if are if they judge  
1253 when you do poorly?  
1254  
1255 Mary:  
1256 Um, again, I think that professors judging us would be based on our  
1257 grades and I don't know if that's always an accurate representation.  
1258  
1259 Interviewer:  
1260 Mm-hmm (affirmative).  
1261  
1262 Mary:  
1263 Again, how much effort we're putting into the class and like what else is  
1264 going on in our lives too? So I think ... I don't think, I don't, I wouldn't  
1265 want our professors to judges just because yeah, I don't think it's an  
1266 accurate representation-  
1267  
1268 Interviewer:  
1269 Okay.  
1270  
1271 Mary:

1272 Our like level of smartness, I guess.  
1273  
1274 Interviewer:  
1275 So do you think you learn more from an experience that's challenging or  
1276 not very challenging?  
1277  
1278 Mary:  
1279 I think there's like a, like a wide range of aspects, so like for example, go  
1280 back to the thermo and seen, er... Machine design, like both of them  
1281 were challenging, but I think like I learned about myself in both of them  
1282 too, that's the question, right? If I learned about myself in the material-  
1283  
1284 Interviewer:  
1285 Either one actually.  
1286  
1287 Mary:  
1288 Okay. So like I learned about myself other than like for example in  
1289 thermo I learned like okay, this is how I study best. Like I learned better  
1290 when these connections are made and then kinda like the exact same but  
1291 on the opposite spectrum for machine design and it's like I did not, I  
1292 don't, I didn't learn this material very well, what are some reasons for  
1293 like how I can study better, like learn better in the future. And so I guess  
1294 what was ... you said something about the material too-  
1295  
1296 Interviewer:  
1297 Yeah, sure.  
1298  
1299 Mary:  
1300 So, um, yeah, I think I learned the material. I think like sometimes it  
1301 requires more effort to me to learn the material is based on I guess how  
1302 the material's presented.

1303  
1304 Interviewer:  
1305 Okay. So does the sort of amount of challenge and experience not affect  
1306 how much you learn from it?  
1307  
1308 Mary:  
1309 I don't think it affects how much, how much you learn from it.  
1310  
1311 Interviewer:  
1312 It's more like what type of challenge and what other factors are involved  
1313 in that case?  
1314  
1315 Mary:  
1316 Mm-hmm (affirmative). And for example, thermo, it's a challenging  
1317 course, I understand, but like for me just like it's an easy class. Like I  
1318 just learn the material so well for some reason. I guess it was just  
1319 because of how it was presented, like I was saying, but, um, like that  
1320 wasn't challenging that I think I learned a lot.  
1321  
1322 Interviewer:  
1323 Okay. So does it matter to you if you succeed during the challenging, or  
1324 a not challenging experience?  
1325  
1326 Mary:  
1327 I think it's cool to succeed in a challenging experience just because you  
1328 know you've been in a lot of work to like I guess make that achievement.  
1329 But then also I guess it depends too on like it's cool to succeed in a class  
1330 where you don't put in a lot of effort because you know that you can put  
1331 that time towards something else.  
1332  
1333 Interviewer:

1334 Okay. What if your teacher assigned you a project of some sort like he  
1335 puts you in a group and tells you to work on something and he tells you  
1336 that he's grading based on your participation and how much you sort of  
1337 display that you've been learning the material rather than whether or not  
1338 you actually succeed with the project. Do you still care whether the  
1339 project succeeds or not?

1340

1341 Mary:

1342 So for example, are you saying I guess as long as you put forth effort  
1343 that you-

1344

1345 Interviewer:

1346 Like he's, he's watching everyone do this and watching. Are you  
1347 learning the concept, are you using the concepts I taught you in this  
1348 class? Are you putting in your share of the effort in this group and he  
1349 cares more about that than whether you actually finish. That's like max  
1350 two percent of your grade. Do you care if you finish it?

1351

1352 Mary:

1353 Not a whole lot. I feel like if it's two percent of my grade, because I  
1354 know it's going to take a lot of time and the payoff is not like as high as I  
1355 like again, like time management, like it's probably not worth it for me  
1356 to put in that much effort towards something that's not worth as much of  
1357 my time as it could be. Like for example, I'm going to throw this one  
1358 back to the ME 101 project. Like I think we put in quite a bit of time in  
1359 our design. Didn't even end up working and I'm pretty sure everyone got  
1360 100 percent of the project if it like... they... Some of the other groups  
1361 they like they worked really well and like would do laps and laps at me  
1362 over all the obstacles. And like I think they got the same grades that we  
1363 did and it's like I don't, I didn't think that that was very fair. Even though  
1364 I think yes we did put in as much effort as they did probably not

1365 actually, but um, like ours just for some reason just didn't succeed as  
1366 much. So I didn't think the grades were very fair on that.

1367

1368 Interviewer:

1369 All right. So now that we've talked through a bunch of different ideas  
1370 related to motivation and effort and challenges, how would you  
1371 summarize what you've shared with me?

1372

1373 Mary:

1374 Um, I know I said time a lot, so I think working with time management  
1375 and just trying to like come up with a balance of, um, like, where can I  
1376 spend my time most effectively is I think we're in like, with  
1377 summarizing a student, I think that intelligence is I guess growing and  
1378 adapting to like a problem when it's, when you're faced with it. And so  
1379 like I think my intelligence is like goes back to time management a lot  
1380 because I'm learning like from school and from my job and from like  
1381 extracurriculars where I should spend my time.

1382

1383 Interviewer:

1384 Okay. Did you gain any insights from our discussion?

1385

1386 Mary:

1387 I learned that I need to work on my time management (laughs) ... I think  
1388 uh, I mean I think I'm doing okay now, but I'm like time management  
1389 for sure is something that I need to like think more about and like where  
1390 I'm spending my time I guess. Right now, I know like I'll, I guess finish  
1391 it eventually, right. And then I don't like log hours or have any like sense  
1392 of how much time I spend on anything, so I think that would be really  
1393 cool to like write out and I guess just see-

1394

1395 Interviewer:



1396 Quantify it?  
1397  
1398 Mary:  
1399 Yeah.  
1400  
1401 Interviewer:  
1402 Okay. Is there anything else you'd like to share with me?  
1403  
1404 Mary:  
1405 I'm interested in how like interested I am in time. It's weird. Maybe  
1406 because I'm just like, I only have a semester left so I don't know what  
1407 I'm going to do. Yeah. It's been a good talk, yeah-  
1408  
1409 Interviewer:  
1410 Okay. Thank you.

1     **Interview Transcript 14: Nest**

2     Interviewer: Allison Adams

3     Date Interview conducted: 11/02/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     So our goal today is for us to have a detailed discussion about your  
8     beliefs about or perceptions of the nature of your own intelligence. The  
9     discussion will inform my understanding of the perceptions of  
10    engineering students, and will help future decisions about the  
11    undergraduate engineering experience, and how they can m- be  
12    improved for all es- students. I wanna hear your own thoughts and  
13    perceptions, I'm expecting that they will be different from the thoughts  
14    and beliefs of others. There's no right or wrong answers. Just take your  
15    time and tell me what comes to mind. I aim to understand your  
16    perspectives. I'll ask questions like, "What do you mean by that?" These  
17    types of questions can end up being a bit awkward as they require you to  
18    really reflect on your experiences. So I will just leave you long pauses,  
19    and if- take your time. If you need any clarification let me know. Any  
20    questions?

21

22    Nest:

23    Sounds good.

24

25    Interviewer:

26    All right. Tell me about yourself as a student.

27

28    Nest:

29    As a student? Um, I like to think that I am an above average student.  
30    Um, throughout high school I was straight-As, and I am also trying to  
31    maintain straight-As throughout college if I can, or at very minimum

32 above a 3.5 GPA to keep my scholarships.

33

34 Interviewer:

35 Okay.

36

37 Nest:

38 Uh, I like to think ... I mean, as a s- I'm an industrial engineer. I guess

39 that's kind of an important thing. I'm an industrial engineering major.

40 Uh, I don't know if I would like to get a master's degree or not, if I do

41 get a master's degree I don't know if I want to get it in industrial

42 engineering, or if I wanna get a master's in business. I like to think as

43 myself as different from a lot of engineering students, because of my ... I

44 like to think that I'm more social. More going up and talking to people a

45 little bit easier than a lot of engineering students can. So I think that's

46 one advantage uh, I really have. So ...

47

48 Interviewer:

49 So what does it mean to you to be an average student?

50

51 Nest:

52 To be an average student? Well- I mean, you're in the 50th percentile.

53 You're- you're average. You're perfectly in the middle, uh, probably in

54 engineering, average engineering student I'd say is, Bs and Cs on

55 average? You know. Not, not really excelling too much but like a 2.6,

56 2.8 GPA, somewhere in there like that. Um, don't really know socially

57 average as a student. I guess I can only say like in the classroom how a

58 student would act that's average. Not really a leader, just kind of gets

59 through at college to get a degree and find a job. Not really trying to get

60 the most uh ...

61

62 Interviewer:

63 Okay. So then, what does it mean to do- to be above that average?

64

65 Nest:

66 Well, to be above average, so, means you're really trying in your uh,  
67 your classes. You're not just trying to get through college, you're trying  
68 to excel in college. You're also doing extracurriculars, which I'm not  
69 doing, but you're also doing extracurriculars. Um, you're trying to come  
70 out of college and be in the highest percentile of people with jobs, you're  
71 trying to be one of the best. Um, yeah.

72

73 Interviewer:

74 Okay. So, why do you feel that you in particular qualify as above-  
75 average?

76

77 Nest:

78 I feel like I qualify as above-average because of my uh, current grades I  
79 guess? I'd say right now, and then ... right now as a freshman I guess,  
80 basically just that, current, my grades I'd say, that's above-average for  
81 most people? Which actually, I don't even know if it is, as a freshman.  
82 But I feel like it is. I guess I've always been above-average so I just kind  
83 of assume I am now.

84

85 Interviewer:

86 Okay. So you said you were different in that you're more social?

87

88 Nest:

89 Mm-hmm (affirmative).

90

91 Interviewer:

92 Tell me about that.

93

94 Nest:  
95 Um, I like to think I'm a lot more social than a lot of kids. Eh, when I sit  
96 down in almost like, a lot of my classes, I'll sit down in my chemistry  
97 class, and the person next to me will, it's like, 50/50 if I say hi to them  
98 first, or they say hi to me first. The people in my chemistry class, they're  
99 pretty outgoing. I go to my calculus class, I feel about like, 95% of the  
100 time I'm the person to introduce myself first. I'm the person to say hi to  
101 them, I'm leading the conversations, I'm really talking to people. In my  
102 other classes, I'm kind of the one who's like, "All right, let's take these  
103 people, let's form a group. Here's what we're gonna do, guys," and I just  
104 feel like I- I can talk to people well. That's why I think I'm in industrial  
105 engineering.

106

107 Interviewer:

108 Okay. Do you think that makes you extroverted, or just good at people?

109

110 Nest:

111 Um, I think those are hand-in-hand. I think I am extroverted-

112

113 Interviewer:

114 Mm-hmm (affirmative).

115

116 Nest:

117 ... and I also do think I'm good with people. That's why I'm in industrial  
118 engineering. Um, yeah. That's ...

119

120 Interviewer:

121 Okay. So, why do you think that- that social aptitude is an advantage?

122

123 Nest:

124 Um, well I think it's really helpful in the workforce I mean, obviously

125 something my dad's always told me my whole life is, you- he- he is not  
126 an engineer, he's in city management and he works with engineers. And  
127 he'll talk about people that are so smart. But he's like, "Yeah, this is this  
128 guy, that's as high as he's ever gonna go because he's an engineer, and he  
129 won't talk to people," and my eventual goal is to get into management,  
130 so I want to be an engineer that's smart, knows all the background, but  
131 eventually work my way up for five, 10 years or something, and then  
132 eventually moves into a management role. Where I'm over people using  
133 my engineering background. Did that answer the question? I kind of got  
134 sidetracked.

135

136 Interviewer:

137 It ... m- m- more or less that you feel like your social skills will give you  
138 a leg up in the work force.

139

140 Nest:

141 Yes. Yeah. I- especially I wanna get into management, and I think my  
142 social skills will allow me to get out of the engineering department and  
143 more into management, where I work with engineers, over them.

144

145 Interviewer:

146 Okay. So let's just talk hypothetically in a class for a moment, and say  
147 you got your exams back. And when you get your exams back you feel  
148 like you've succeeded on that exam. How do you react? And why?

149

150 Nest:

151 I feel that I've succeeded.

152

153 Interviewer:

154 Mm-hmm (affirmative).

155

156 Nest:

157 Um, so I guess first I'd have to define success. So, I- I don't know, my  
158 succ- succ- I've succeeded on an exam, I got, usually I try to shoot for  
159 above a 95% on my exams, so that way I don't have to go too hard on  
160 the finals, and then ... how do I feel? I guess, I- I feel good. I feel like  
161 I've ... I've put in the right amount of studying I've ... you know, I spent  
162 my time right. I did, I feel (laughs) I don't know, I feel good. I feel  
163 happy. I'm ... I'm- yeah I feel I worked hard enough. I don't know ...

164

165 Interviewer:

166 Okay. So, you said that it's generally 95% and above, does that stay the  
167 same for all of your classes?

168

169 Nest:

170 Yes. I pretty much, almost all my classes, I mean, I do, I've, like, I'll get  
171 96 on a test and sometimes I'll be mad at myself 'cause I could've easily  
172 been 100 because I missed something stupid. Um, that's a pretty  
173 common theme. But usually if I get above a 95 I'm, I'm pretty happy  
174 with myself. I mean, obviously I'm ... I am, I get really frustrated, with  
175 like a 96% and then I missed just like, something really dumb. So, I  
176 guess I'm fully satisfied when I get 100%. I did perfect, there's nothing  
177 else I could've done better. That's when I really feel best, but ... yeah. 95.  
178 That's- that's usually the cut-off where I'm like, "All right. Good job." I  
179 usually don't like getting just a 90, 'cause that's really close to the  
180 threshold.

181

182 Interviewer:

183 Okay. What do you consider an g- gr- per ... why can't I say that this  
184 semester?

185

186 Nest:

187 (laughs).

188

189 Interviewer:

190 Grave curd.

191

192 Nest:

193 Grade curve?

194

195 Interviewer:

196 That ... I- I've been having trouble with that phrase. (laughs) all  
197 semester. Um, would you consider one of those to alter your perception  
198 of uh, success? Like, would you still consider something a sussex- a  
199 success if it was a 95 but only after a grade ... grade-

200

201 Nest:

202 Grade curve? Um, that's a great question. I think, it really depends on  
203 the test I took I guess. Um, usually when there's a grade curve on a test it  
204 means that a lot of students did really bad. I actually haven't had a single  
205 test I've been in been curved so far, but I ... I don't know. If I'm taking  
206 the test and as I'm going there the information and I'm sitting there like,  
207 "You know this, but you didn't study, you don't know how to use the  
208 right variable here, and you miss it," and I ended up getting it curved up  
209 to a 95, in reality I probably could have scored 10% higher and got 105  
210 on the test? I'd definitely be upset with myself. But if I did ... if I was  
211 going through that test answer I was like, "all right, this ... I've never  
212 seen this information before in my entire life," and that's why the  
213 information got curved. Because the teacher's like, "Well, every single  
214 student in the class missed this question. Maybe I didn't teach them well  
215 enough." Then I'm not upset with myself because then I couldn't have  
216 done better. I couldn't have studied for something I don't know.

217



218 Interviewer:  
219 Okay. So let's say hypothetically, you know somebody else in the class  
220 that you consider to be smarter than you are. And you did better than  
221 they did on the exam. How would you react to that?

222  
223 Nest:  
224 Um, generally feel pretty good. I like, and one thing I try to do is I try  
225 and be with people that are as smart as me or smarter than me, as I  
226 perceive. So that's a pretty common thing. Me and my friends will get  
227 our tests back, it's like a 97, 99, 100, like, and we'll bounce back and  
228 forth and I'm- I, I like being the top one, you know, it's, it's nice to beat  
229 people, um, I like to think I'm a very competitive person, but ... and in  
230 reality it doesn't even matter. It's not a class where he's only giving out  
231 40 A's, but, I'm not going to say I dislike it. I wanna see them do well,  
232 but yeah.

233  
234 Interviewer:  
235 Okay. So would you share with anyone else that you did better than your  
236 friend group of smart and smarter people?

237  
238 Nest:  
239 No.

240  
241 Interviewer:  
242 Okay.

243  
244 Nest:  
245 Generally no, uh, ,uh ...

246  
247 Interviewer:  
248 Why not?

249  
250 Nest:  
251 I just, share with uh ... first off, they probably don't care.  
252  
253 Interviewer:  
254 Mm-hmm (affirmative).  
255  
256 Nest:  
257 Usually, if someone's talking to you about a test, if someone, if someone  
258 comes up to me and they're like, "Oh, how'd you do on the calc test?"  
259 And I was like, "Got a, whatever, 98." And they were like, "Oh okay,  
260 and how'd this person do?" Depends on the person I'm talking to, but I'd  
261 probably be like, "They got a 96." But, I'm never gonna come up to  
262 someone and like, try and tell them my test score. I generally, I mean, I  
263 used to do that a lot in like, middle school, and like, like lower high  
264 school and stuff, until I realized that really no one cares what you got on  
265 your test scores. Well, they do care, they like to hear, and I like to hear  
266 other people's averages and stuff, but 90- if you ever initiate a  
267 conversation with somebody about a test score just to tell them your test  
268 score? You're just bragging and no one likes someone like that. So I-  
269  
270 Interviewer:  
271 So, you found a sort of social rule where, y- you wait until you're asked?  
272  
273 Nest:  
274 Yeah.  
275  
276 Interviewer:  
277 Okay.  
278  
279 Nest:

280 I think it's ... yeah. Gen- just kinda rude to tell- especially if you know  
281 that person's not as smart as you, or you don't think they're as smart as  
282 you-

283

284 Interviewer:

285 Mm-hmm (affirmative).

286

287 Nest:

288 ... and you just talk to them to kinda tell- 'cause I used to do that. A lot.

289 And then it's just like, just not the right thing to do. It's not polite. It's

290 just rude. No one's like, "Wow, he's smart. I like that guy now," because

291 you just told him your test score. It's not what you think it is mentally.

292 It's just ... no one likes that. (laughs).

293

294 Interviewer:

295 Okay. So, is there anyone you w- wouldn't share with if they asked?

296

297 Nest:

298 No.

299

300 Interviewer:

301 Okay.

302

303 Nest:

304 I really don't think there's a single person that I wouldn't- I, if I got a

305 65% of a test I would tell them I got a 65% and, I don't know, kinda

306 force myself to live with the embarrassment for what I did. You know?

307 I- I wouldn't make it up, I wouldn't lie. I- yeah.

308

309 Interviewer:

310 Okay. So, why do you not care if they know your test scores, even if you

311 wouldn't just tell them without being asked first?  
312  
313 Nest:  
314 Why do I care that they know my test score?  
315  
316 Interviewer:  
317 No, why do you not care.  
318  
319 Nest:  
320 Why do I not care they know my test score. Uh, it doesn't affect me.  
321  
322 Interviewer:  
323 Okay.  
324  
325 Nest:  
326 It doesn't, and like I said, if- if for some reason we were in some kind of  
327 crazy competition? Or something like that? Or like, the grades were  
328 distributed and this person wanted to know if they, how I did on the  
329 test and if they needed to do better than me, or they needed to do even  
330 better on the next test because I did worse? Maybe I wouldn't. But, when  
331 it's just a general overall, and the only person that's putting in grades is  
332 the professor, I- I really, don't think it affects anything but what that  
333 person thinks of me. If they think of me as smart or not? I like to be  
334 thought of as smart, but, I, I just, I'm not really embarrassed about it I  
335 guess. I'm pretty open. I generally do pretty well. But ...  
336  
337 Interviewer:  
338 Okay. So what if you did not feel like you succeeded after getting an  
339 exam back?  
340  
341 Nest:

342 I definitely, I'd, beat myself up about it. I'd be upset. I'd probably be full  
343 of regret, first off. I'd be like, "Why'd you do this last night instead of  
344 studying?" Usually it's probably like, one specific thing that I miss. I  
345 tend to overthink things. So, I get too focused on that. I- I really beat  
346 myself up a lot about it. And then, generally just be upset because now  
347 I'm gonna have to put a lot more effort in later in the semester. Do-  
348 making sure I get 100% on all my homeworks, and I'll have to really  
349 study well for the final, so ... just upset about waste. And you know. My  
350 time lost. And how stupid I was, I guess. (laughs).

351

352 Interviewer:

353 Okay. W- what if you didn't have a, that time you should have been  
354 studying that you could kind of point a finger back at. What if you had  
355 been studying and just, for some reason you didn't do that well?

356

357 Nest:

358 If I really felt like I studied my hardest on a test, I- I did that, and I didn't  
359 do well on the test? Then I guess I'd, I mean, I'd still be disappointed in  
360 myself. Um, probably face the hard truth, I guess, at that point. If I'm  
361 trying to get an A in the class, and I just got a 70 on an exam that I tried  
362 my be hardest at, I'd, probably be like, "Well, don't want to invest that  
363 much time in it. I'm probably gonna get a B in here, or maybe even a C,  
364 who knows. This information clearly isn't clicking with me," so, I'd  
365 probably be less disappointed than the earlier scenario where I did know  
366 what I did wrong. If I tried, and I just can't grasp the information, then  
367 I'd do that. Yeah.

368

369 Interviewer:

370 Okay. What if the other students in the class did much better than you  
371 did?

372

373 Nest:

374 Um ... yeah, that'd make me definitely feel even worse. Usually there's a  
375 hope of a curve or something. Usually if I do bad on a test a lot of other  
376 people do bad on the test, so ... I'd probably try and find something to  
377 blame it on, and then if really it was, I was studying and I didn't know  
378 the information, I'd ... hmm. I really don't know. I'd be disappointed, but  
379 ... yeah.

380

381 Interviewer:

382 Okay. What if someone you don't consider to be as smart as you uh, did  
383 better than you did?

384

385 Nest:

386 Um, I'd really ... I like to think I wouldn't mind. I, I mean, what kind of  
387 scenario are we talking here? Like, like I got a 70 and the person I think  
388 is not as smart as me got like a 90? Or like, I got like a 96 and the person  
389 who's not as smart as me got like 100? You know?

390

391 Interviewer:

392 Talk about both.

393

394 Nest:

395 Well, I mean, the 96 and the 100 thing I'd probably feel ... I- if the  
396 person's my friend I'd probably feel good for them. Because usually  
397 they- they probably are working a lot harder than me. And they probably  
398 are studying really hard, so I wouldn't be that upset with that. Uh, the 70,  
399 and like, 90 scenario ... I'd definitely beat myself up a lot, because I'd be  
400 like, "Well, I've been going through this class, the whole time I've been  
401 doing better than them, I'm doing better than them. If they can get a  
402 90%, I can definitely get a 90%," like, I need to change something.

403

404 Interviewer:  
405 Okay. Would you share with anyone else that, that person did way better  
406 than you did?  
407  
408 Nest:  
409 Yeah. Yeah. Definitely would.  
410  
411 Interviewer:  
412 And would it be another case of, "Wait 'till someone asks?" Or ...  
413  
414 Nest:  
415 Hmm. Like, I'm talking to someone, and they're like, "How'd you do on  
416 the calc test?" And I'm like, "I got a 70 on it." And they're like, "Oh."  
417 "But uh, Jimbo over there got a 90." I'd definitely say that. I ... I don't  
418 have a problem bragging about someone else, especially if they're my  
419 friend.  
420  
421 Interviewer:  
422 (laughs). I- I've seen that happen before, it's kind of funny.  
423  
424 Nest:  
425 Yeah (laughs).  
426  
427 Interviewer:  
428 So, why, why are you not shar- shy about sharing that they did so well?  
429  
430 Nest:  
431 Well, because um, you know, bragging about your own test score is  
432 arrogant. Cocky. N- no one cares about it. You're talking about someone  
433 else, you're telling someone else how someone else did? You know.  
434 They don't wanna tell, they don't wanna be going around like, "I got a

435 95% on my test," or whatever. But-

436

437 Interviewer:

438 So it's lifting someone up?

439

440 Nest:

441 Well, yeah. It doesn't hurt- it doesn't hurt you to share it with them,

442 unless you're really that embarrassed, but, yeah. I don't, really see any

443 fault in it.

444

445 Interviewer:

446 Okay. Does it matter to you if your peers think you're smart?

447

448 Nest:

449 Yeah.

450

451 Interviewer:

452 Alright, why?

453

454 Nest:

455 Yeah. I like to be thought of as smart. I don't know, well especially, um,

456 in the workplace. I mean, or just, really anywhere. I mean, if you're- if

457 you're not thought of as smart or intelligent, I don't know if those words

458 are interchangeable, necessarily, but if you're not thought of as smart,

459 then the things you say aren't uh, you know, the people will trust what

460 you say less. They, you'll try and make decisions and people will be like,

461 "Oh, like, do we wanna really listen to him?" You know, so yeah. I think

462 I'd like to be seen as smart.

463

464 Interviewer:

465 Okay. So, what about your professors. Do you care if they think you're



466 smart?

467

468 Nest:

469 That's a tricky one. Honestly, I probably- I probably, first inct- instinct  
470 to say, "Yeah," but ... um, at the same time, if, like the person grading  
471 my papers thinks I'm less smart? They'll go easier on me and give me  
472 higher grades. So I don't entirely think that's a bad thing. Um, and in  
473 reality, in most classes they're just throwing sheets into a Scantron, or  
474 whatever, so I think that's beneficial. Especially in the lecture classes I'm  
475 in most of the time. At the same time, though, in my like, smaller  
476 classroom-setting classes, I definitely want the professor to think I'm  
477 smarter. That way I can have a more in-depth conversation with them,  
478 and they can give me more complex topics when I'm just talking in a  
479 more one-on-one scenario. But like, my calc professor? I really could  
480 care less if he thinks I'm the dumbest person in the classroom or the  
481 smartest, because he's just talking to 300 kids up there.

482

483 Interviewer:

484 Okay. So you'd probably care more if it was a smaller, more intimate  
485 setting then?

486

487 Nest:

488 Yeah. 'Cause I think the teacher might actually treat me differently.  
489 Like, less smart and he'd um maybe dumb things down for me and stuff.

490

491 Interviewer:

492 What's the smallest class you've ever been in?

493

494 Nest:

495 College-wise?

496

497 Interviewer:

498 College or not, either way.

499

500 Nest:

501 Well, high school, um, I was in a class of like, seven kids. It was, it- it  
502 was the gifted, or whatever, kids class. And that was a, that was a really  
503 interesting setting, because I was definitely middle of the pack in that  
504 class. There's kids in there who took their ACT one time and got a 35 on  
505 it.

506

507 Interviewer:

508 That's impressive.

509

510 Nest:

511 There's like ... yeah. It's, there was like, two kids. Two of the seven kids  
512 in the class did that. And then another got like a 30 ... whatever, 34 on  
513 the ACT. So there's, really high level. And I was, really about middle of  
514 the pack. There were some kids lower than me but, I was just right about  
515 in the middle. And I cared about what my teacher thought of me. How-  
516 how smart she thought I was. But, yeah uh.

517

518 Interviewer:

519 Okay. Tell me about what motivates you to keep pursuing a degree in  
520 engineering?

521

522 Nest:

523 Um ... uh, well, obviously I want to be into the workforce. And I think  
524 beyond that, I wanna be, my degree in industrial engineering, I wanna  
525 pursue that degree because a large percentage of industrial engineers end  
526 up moving into management positions later in their career. And an  
527 engineer undergrad, looks really good. Especially when paired with a

528 management grad degree. Or so I've been told. And I feel like I have big  
529 strengths in science and math, so I feel that I'd do pretty well getting an  
530 engineering degree, and then to get a master's degree in miz- business  
531 management or just go straight to the workforce and not really formally  
532 learn to use my people skills, I guess, just learn how to do the  
533 engineering stuff, be an actual engineer, and just use my people skills to  
534 manage, learn on the job. I feel like that's a lot more scary to learn. The  
535 job. So, get my engineering degree to get started in the workforce I  
536 guess is my first thing.

537

538 Interviewer:

539 Okay. Why is it motivating to you?

540

541 Nest:

542 Uh, so I can live by myself. So I can have my own house. So I can be  
543 self-sustaining, pretty much is the number one thing.

544

545 Interviewer:

546 Okay. What- what does the draw for you to be s- independent like that?

547

548 Nest:

549 Like, why do I wanna be independent?

550

551 Interviewer:

552 Sure.

553

554 Nest:

555 I don't know. Just kinda always, ah- it's what everybody does I guess.

556 I've never in my entire life, wanted to come out of college and live in my  
557 parents' house-

558

559 Interviewer:  
560 I know people who have wanted to do that (laughs).  
561  
562 Nest:  
563 ... so I ... yeah. I have no desire to do that. I'd feel dead, but ... maybe if I  
564 find myself back in Kansas City but ... I really have no desire. I wanna  
565 come out, I wanna be independent. I wanna be, you know, really self-  
566 sustaining-  
567  
568 Interviewer:  
569 Self-sufficient-  
570  
571 Nest:  
572 ... taking care of myself. Self-sufficient?  
573  
574 Interviewer:  
575 ... That's the word. Self-sufficient-  
576  
577 Nest:  
578 ... okay. (laughs).  
579  
580 Interviewer:  
581 Okay.  
582  
583 Nest:  
584 Yeah. That just seems really to appeal to me. To do my own thing. Live  
585 on my own-  
586  
587 Interviewer:  
588 Okay.  
589

590 Nest:

591 ... start my own life.

592

593 Interviewer:

594 Let's say I ask you to make a pie chart of your motivations as a student.

595 What percent would you say that your efforts are motivated by your

596 grades versus by your desire to learn?

597

598 Nest:

599 Um, depends. Class to class. Chemistry? It's almost 100% grades.

600 Literally don't care about it at all. But then, my industrial engineering-

601 specific classes, that seminar where he talks to us? I, I could get an A in

602 that class without showing up. But I probably have 85% wanting to

603 learn. Uh, the professor, he's just really good. He teaches really well. I

604 really enjoy the class. So I, I like my degree. I think, I learn stuff that, I-

605 overall I'd probably say like, 60% learning? I don't know? I'd like to get

606 good grades, but yeah.

607

608 Interviewer:

609 Okay. Why is that the way it is? Like, why do you think you're less

610 motivated by a class you don't care about, like chemistry?

611

612 Nest:

613 Because it doesn't matter. I really, I show up to my chemistry class and

614 she teaches us how to do like, rearranging equations, or teaches us about

615 whatever in an atom and ... just stuff I'm 99.999% sure will never apply

616 to me. I'm not- and I'm not interested in it. On top of that. So I really just

617 don't care. So, yeah. I- I'm in that class because it's required by industrial

618 engineering. I'm gonna take it, I'm gonna get an A in there. I don't have

619 any- I also don't have es- if I was taking Chem -? If we required Chem-1

620 and Chem-2? Then maybe I'd wanna grasp the information, maybe learn

621 it instead of just like, memorizing a few equations. But really, I've just  
622 gotta take Chem-1 so I'm really putting in as little effort as possible to  
623 just do that.

624

625 Interviewer:

626 Okay. So can you think of a circumstance where your answer might  
627 change?

628

629 Nest:

630 Yeah. Like, definitely Calc-1. I have to take Calc-2 and three. So I really  
631 think it's important I have a strong foundation in Calc-1 to take those. So  
632 I make sure I don't miss any lectures in that, I show up every single day.  
633 Sometimes it might be dumb, sometimes it really seems like I want to  
634 stop paying attention when he's proving how things happen because he'll  
635 do that and half the class will stop listening to him. Because it doesn't  
636 matter. But I- I really do try to pay attention and understand theorems  
637 and ... because then, then you don't have to memorize things because  
638 you actually understand it. And that's always how I think I've been as a  
639 learner, is I try and understand something. Don't try and memorize it.  
640 And so definitely like Calc, where I have to take two and three, and  
641 same thing with the industrial engineering class. And that, I think I  
642 wanna learn a lot, because the teacher's just really interesting. He's just,  
643 what he talks about is just fascinating to me. So, yeah.

644

645 Interviewer:

646 Okay. So, in what ways are your grades important to you?

647

648 Nest:

649 My grades earn my GPA, and my GPA will help me eventually get into  
650 graduate school or, um, get a job. Get hired. Really don't mean anything  
651 else besides that.

652

653 Interviewer:

654 Well, not your scholarship? (laughs)-

655

656 Nest:

657 Oh, well, yeah, yeah, uh, also that. My scholarship. Gotta keep my,

658 those, gotta keep my grades high enough to keep my scholarship,

659 obviously, don't wanna pay money. And then, yeah. For job's to look at

660 and grad school. I can't really think of any other meaning than that. I

661 really don't share my grades. I guess my parents. They want me to do

662 good. But I- I- also just think my parents just want me to do good so I

663 don't have my scholarship. So I don't lose my scholarship. So, yeah.

664 That's pretty much what grades mean to me.

665

666 Interviewer:

667 Okay. In what ways is learning important to you?

668

669 Nest:

670 I think learning's really important. Learning's like, uh,- I mean, I don't

671 wanna say it's the reason I'm in college, because a lot, it's, you're in

672 college 'cause you need a degree. But I think that the stuff you can learn

673 can be really beneficial. And the right teacher can actually teach you

674 stuff that actually matters. And it could eventually become useful to you

675 in the workforce- and not only in the workforce, in life. Like lots in my

676 economics class and stuff, I don't know how much I'm going to use that

677 in industrial engineering, but I definitely am going to take my money out

678 of a bank account and put it into the stock market and just, you know

679 help myself overall there. I think I might pursue a business minor. Not

680 even so it shows up, just so I can use those electives to make myself

681 make smarter financial decisions in the future. So, I think that, learning

682 how to use your money right, and I can't talk too much about the

683 industrial engineering stuff because I'm a freshman. So I haven't gotten  
684 that high into high-level stuff, but just his, the way he teaches us about  
685 basic things, I think are really interesting-

686

687 Interviewer:

688 Okay.

689

690 Nest:

691 ... to learn about.

692

693 Interviewer:

694 Eh- so largely, would you say that learning is important to you because  
695 it prepares you to do better later?

696

697 Nest:

698 Yes. Yeah, that. Yeah. I learn information so I can use it later. Well,  
699 sometimes things are just interesting to me. But-

700

701 Interviewer:

702 Like random trivia?

703

704 Nest:

705 ... usually ... well, yeah. Like random trivia, or like, like learning history.

706

707 Interviewer:

708 Mm-hmm (affirmative).

709

710 Nest:

711 Like, I really wish I could take a history class, where they were just like,  
712 told you about history. Every day you showed up for your lecture and it  
713 was just all attendance and that was it. I mean, you didn't have to



714 memorize 100 different stupid history facts about what year Abraham  
715 Lincoln did this and but- but, just learn about it. I think that stuff's  
716 interesting to me. But I don't really wanna memorize stupid information  
717 so that's probably why I'll never take a history class.

718

719 Interviewer:

720 Okay. So, let's say that you have to choose a professor for a core course  
721 required in your major. And there's two options. There's Professor A,  
722 and basically it's two different lectures but both work for your schedule.  
723 Just taught by different professors. Professor A uh, by reputation you've  
724 heard that in Professor A's class you're gonna learn a lot but you're  
725 gonna have to work your butt off to do well in that class. And Professor  
726 B, you've heard that you're probably gonna get through that class pretty  
727 easily, but you might not have learned as much in the end. Which one  
728 would you enroll in?

729

730 Nest:

731 I wanna say that I'd take Professor A's class where I'd have to work hard,  
732 but I'd, I'd probably take Professor B's class. I'm almost, and depends  
733 what I'm learning but I'm ... well, you know, if I'm taking Calc-1, I'll  
734 take Professor A's class. Because I wanna actually learn the information,  
735 not just, 'cause I could then just take it at a community college or  
736 something. But, if I was taking Calc-3 I would take Professor B's class.  
737 If I was taking the end of a road, pretty much anywhere, or if you said in  
738 my major, so, in industrial engineering class ... I'd probably take  
739 Professor B's class. Honestly.

740

741 Interviewer:

742 Okay.

743

744 Nest:

745 I like learning, but ... yeah.

746

747 Interviewer:

748 Why is that?

749

750 Nest:

751 How beneficial is it really gonna be to me? It's really nice to learn a lot

752 of information and to know, but it's nice to have a lot of free time I

753 guess. It's nice to just kinda cruise through something and when the only

754 application I'm gonna see is five years down the road, maybe I might use

755 it in my career? Depending on which factory I go in to, depending which

756 job I get, not a great chance that this is gonna become really useful, it

757 doesn't- something else in my college degree doesn't really rely on it,

758 probably just delay my own free time more.

759

760 Interviewer:

761 Okay. So can you think of a [stammer] ... situation where your answer

762 might change?

763

764 Nest:

765 Yeah. So, um, I did it again, I answered before-

766

767 Interviewer:

768 Yeah.

769

770 Nest:

771 ... like, uh, Calc-1. I would take Professor A's class.

772

773 Interviewer:

774 Why?

775

776 Nest:  
777 Because I think that it would be more useful. I actually get to ... uh,  
778 totally lost my train of thought ... I- I need to build a foundation. I wanna  
779 learn a lot of Calc-1 so when I take Calc-2, one of the hardest classes, I  
780 know what I'm doing. I- I have a really good understanding, I didn't just  
781 like cruise through an easy A. And I feel like I have done that. Like, I  
782 probably could've gotten a 3 on my AP test and then just showed up in  
783 Calc-2 my first day, my freshman year. But I didn't wanna do that.  
784 Because I wanted to get a good understanding of Calc-1 before I went  
785 into Calc-2. So, yeah.

786  
787 Interviewer:  
788 Okay. So tell me about your learning and studying strategies?

789  
790 Nest:  
791 Um, I'll start with learning strategies. Definitely, when I try and learn  
792 something, I hate memorizing information. I never wanna memorize  
793 something. I always, like, for example, in calculus, you can memorize  
794 the antiderivative of a tangent, or you can calculate it. And it takes a  
795 little bit longer, and it's pretty complex, but if you can understand it  
796 overall then it makes it a lot easier to get the memorization down and  
797 then you can just know what it is. So I always try and grasp the topic  
798 overall so I understand what's going on. So not that I have to understand  
799 that acceleration is the derivative of velocity, but I just know that  
800 velocity is increasing and, at a rate, a constant rate or whatever, sorry ...  
801 that's not how it should be said, but whatever ... but that I just know  
802 what acceleration is in relation to velocity, so that's why it's the  
803 derivative. I think that's definitely why I learn, and I- I think it makes me  
804 a better student, and I think it makes things a lot easier to do. Because  
805 studying, okay, on the studying side of things, um, usually I'll try and,  
806 and you know, do the practice test. Study, try and learn topics overall,

807 never try and make myself memorize things, and then about hour four,  
808 maybe I'll give up and just memorize a few things. Um, yeah, like,  
809 studying habits for my calc class and my macroeconomics class are  
810 pretty different. My calc class, I'll look at the practice test, I'll do  
811 problems, I'll understand the problems, I'll do it like that.  
812 Macroeconomics, it's kinda a lotta like, definitions and stuff. And,  
813 which, you can, overall like learn why it's called that and stuff, but not  
814 always. So it is more, macroeconomics I just stay up 'till like, 2:00 AM  
815 the night before my test just going through my notes, just going through  
816 all my homeworks, knowing why, why things happen. Whereas calc,  
817 sometimes I only have to study for like an hour, hour and a half before  
818 the test or something like that. Because I actually tried to learn it earlier.  
819

820 Interviewer:

821 Okay. So, how did you come to use those strategies?

822

823 Nest:

824 Um, so, uh, I use, the information I learn, like if I just learn how  
825 something works, then I don't have to rely on the memorization... like if  
826 I'm taking- which, all these strategies, I'm basically using them to  
827 prepare for the a test, I guess, that's what it's all leading up to. And on  
828 calc, you know, I learn the information, and then I look at the test and I  
829 understand the problem. It's not a problem where I'm like identifying  
830 something in the problem like, "Oh, it says this, that means I have to use  
831 this specific formula." I look at it I'm like, "Oh, okay, these functions are  
832 between these points, I need to use this." I need to do, like, I gotta do  
833 that, I gotta learn, I know why I'm doing this. Not just 'cause, "Oh, I see  
834 this function here, I- it has to go with this specific formula," like, that's  
835 never how my mind's worked. Then I'd be like, "Well, is it that formula?  
836 Or is it this formula? Or is it," ... but if I understand it, it makes me a lot  
837 more confident on a test and it makes me do a lot better. Than just like, a

838 memorization.

839

840 Interviewer:

841 Okay. How have these strategies that you use changed over time?

842

843 Nest:

844 I can't really say they've changed that much-

845

846 Interviewer:

847 Mm-hmm (affirmative).

848

849 Nest:

850 ... honestly, um ... well, like the memorization thing. Uh, when I have to

851 memorize stuff, in college, it's a lot more stuff to memorize. And it's a

852 lot harder than it is in high school when you had a little test. So, but

853 honestly the learning, I th- I like to think I've always been someone that,

854 I'm- I'm like, act- I also don't wanna just learn it so I know how to do it

855 on a test, I'm actually curious. Like, why does that happen? Why does it,

856 why do you use this thing? So, I'm curious as to why, and then it really

857 comes in handy then. So, yeah. Uh ...

858

859 Interviewer:

860 Okay. In general, how much effort do you feel that you have to put into

861 your classes? Versus how much do you put into your classes?

862

863 Nest:

864 Um, I always think I have always been pretty good at doing the right

865 amount to do the best ... to do the least amount of effort to be the best.

866 So the best grade you can get in a class is an A, and at the end of the

867 semester, 90.0% and 100% both go into your GPA as a 4.0-

868

869 Interviewer:  
870 Mm-hmm (affirmative).  
871  
872 Nest:  
873 ... so, you know? What was the question? Again?  
874  
875 Interviewer:  
876 How much effort do you feel that you need to put into your classes-  
877  
878 Nest:  
879 Effort yeah.  
880  
881 Interviewer:  
882 ... versus how much do you put into your classes?  
883  
884 Nest:  
885 So, I feel, I think I do, I think those are equal for me. I, I feel like I need  
886 to put in exactly enough work to get exactly a 90.0% and I do that. And  
887 usually my strategy when I do that is, I try my very hardest at the  
888 beginning of the semester, and then, I- I this is my plan, I haven't  
889 actually gone through finals yet, but, I wanna try my hardest through the  
890 whole semester, so when I get to finals week, I can get a 75 or an 80 on  
891 my final and still get an A. And it'll drop my grade five points or  
892 whatever? But I can not be as stressed. And I won't memorize my final  
893 and try and get 100% because I don't need to. Because I worked hard  
894 earlier. Like, it's the minimum effort to do the best. I'd say is my, pretty  
895 much how I'll get through college.  
896  
897 Interviewer:  
898 Okay. How much effort do you feel that you put into your classes in  
899 comparison to other students?

900

901 Nest:

902 Um, less.

903

904 Interviewer:

905 Why do you feel that way?

906

907 Nest:

908 Right now. Like, definitely my chemistry class, uh, for some reason  
909 chemistry, it just seems really easy to me. Just balancing equations back  
910 and forth. I haven't studied for more than an hour for any of my tests all  
911 year, and I've done very well on them. And I'll, the people I sit next to,  
912 sometimes, well, I sit next to some people that are really smart, and I'll  
913 sit next to other people that aren't that smart. And they'll tell me how  
914 they studied 16 hours all weekend and then they got a 78. And I, I  
915 definitely put a lot less effort in than them. And then calculus, th-  
916 everyone I sit next to in calculus is really smart. So most people I talk to  
917 are, they all do just as well as I do on the tests. So I don't really know,  
918 I'd- like, I think all of us are pretty smart so I think all of us are putting  
919 in a lot less effort than a lot of people.

920

921 Interviewer:

922 Okay. Ha- do you feel that you need to put in more effort or less effort  
923 since you uh, came to college?

924

925 Nest:

926 Definitely thought I'd have to- I, I put in more effort. Other cla- well,  
927 yeah. Yeah. I put in more effort. Because like other classes, like my  
928 graphics class, where I'm actually building things and doing homework,  
929 that class is really harsh and I have to work really hard. And they will  
930 go, and you make one small mistake on something ... you dimension one

931 part, or you put one too many zeroes on one thing ... they're like, "Boom.  
932 20% off that entire homework grade. Just because you did that one  
933 thing." So that's made me try really hard and I've really had- never  
934 worked that hard in math. Honestly, I don't think the tests have been any  
935 harder than they have been in high school. So, test-wise not so much.  
936 But homework, you gotta try a little bit harder on.

937

938 Interviewer:

939 Okay. How do you feel about needing to put in more effort than high  
940 school?

941

942 Nest:

943 I knew it would happen, I knew I'd have to put in more effort. And  
944 honestly, it's still less time. High school I'm there from 7:30 'til 2:30  
945 every single day. And not to mention like, sports. 7:30 'til 5:00 every  
946 single day. And now I'm going to school, and if I put in like, half as  
947 much of that time I would have been in high school, with just doing  
948 homework and stuff, I easily have way more free time. So it really hasn't  
949 been that difficult for me. That much more effort, still way more free  
950 time, still a lot nicer, I think.

951

952 Interviewer:

953 Okay. So do you feel that you learn more from classes that you have to  
954 put more effort into?

955

956 Nest:

957 No. No.

958

959 Interviewer:

960 Why is that?

961



962 Nest:

963 Because some classes I understand the information, and if I just  
964 understand the information really well, then I think I learned a whole lot,  
965 and since I understand it I can take the test well, I can do the homework  
966 easily. Not a problem. But then, like, uh, some of my, like my graphics  
967 class. I'll go back to, it's a lot of work. A lot of work doing a lot of things  
968 that I don't think really matter. And it's looking at, really, details that I  
969 don't think are important to it. So ... yeah, that's, go back and forth. I-  
970 that's a lot of effort but I don't think I learn at all. Really.

971

972 Interviewer:

973 Okay. What about, do you think you ... what about that question but  
974 compared to your peers. Do you feel like you're, you learn more in a ch-  
975 in a class that you have to put more effort into compared to your peers,  
976 or less compared to your peers?

977

978 Nest:

979 I, I think I put in less effort usually. Like, some classes, like  
980 macroeconomics doesn't click that well for me.

981

982 Interviewer:

983 Okay.

984

985 Nest:

986 So, sometimes I have to put in a lot of effort. But like, calc and  
987 chemistry-

988

989 Interviewer:

990 Mm-hmm (affirmative).

991

992 Nest:

993 ... I feel like they- I learned a lot and they click really easily for me. So  
994 I'm definitely putting in less effort there.

995

996 Interviewer:

997 Okay. Now, think about a subject or a class or something that you had to  
998 put in a lot of effort to succeed. You did succeed, but you had to work  
999 your butt off to do it. And tell me about it?

1000

1001 Nest:

1002 So I guess it'd have to be in the past. I mean ...

1003

1004 Interviewer:

1005 Past or present.

1006

1007 Nest:

1008 Well, engineering graphics, right now. That's definitely the most work  
1009 I'm doing in any of my classes. And that class, like I said, they're just  
1010 brutal. They'll just- you'll mess up one thing, and it- it's, if- they come  
1011 back and they hand me back one of my homework assignments, it's like  
1012 a 12 out of 25. it doesn't even faze me at this point. I'm just like, "Wow,  
1013 man, that's unfortunate." Because they just- they just tear you apart  
1014 every single day. And, I, I took it in high school and I generally, like, I  
1015 liked it I learned the information and like, I get the homework. I've never  
1016 cheated on it, I actually do all of it, I'm trying to learn all of it, and I  
1017 really made myself, like, when I'm doing a homework assignment, we're  
1018 drawing stupid things. You've gotta draw line- straight lines without  
1019 using straight edges and I just really like, buckle down. It's like, "All  
1020 right. You can do this, you can do this, like, you- you get to work." And  
1021 then, uh, first test came around, and our class average was a 53%. And I  
1022 ended up getting a 90 on it. That, way back to the earlier part, that is a  
1023 90% I didn't feel bad about. Actually there was mystery points on

1024 something really stupid, but, you don't care about that. But, um,  
1025 (laughs). I didn't feel that bad about 90% because the class average was  
1026 53. They didn't curve it, I still have a B in there, but I felt pretty good  
1027 after that. I felt that some of the work, I really tried to do well in that  
1028 homework and it actually paid off.

1029

1030 Interviewer:

1031 Okay. How do you feel about that class that you're taking?

1032

1033 Nest:

1034 I hate it. I hate it every single day. It's an 8:30 class, I go in there and I'm  
1035 .. information. I actually kind of like building the parts and stuff, but I  
1036 dread the teachers, I dread how they grade. I hate my TA, he just ... he's  
1037 just ... he seems like a nice guy but he grades, uh, just those little things  
1038 that they just tear apart. And, it's just like, "Oh my god." And they didn't  
1039 curve a test that the average was 53% on, so I don't think I hate it-  
1040 dislike it a lot more than a lot of the other people in the class.

1041

1042 Interviewer:

1043 Mm-hmm (affirmative).

1044

1045 Nest:

1046 But ... I, don't think as an industrial engineering I'm gonna use the  
1047 information I'm learning in that class, so I don't think the hard work is  
1048 gonna pay off at all. So.

1049

1050 Interviewer:

1051 Okay. What are you getting out of that experience?

1052

1053 Nest:

1054 I'm, I guess I'm learning how to work pretty hard, th- that's one thing

1055 you come to college and when they tell you the class average on this test  
1056 is 53%, nothing like that every happened in high school. Something like  
1057 that happens in high school, you know, parents are going to the school  
1058 board, and things are going like that, and the principal's talking to the  
1059 teacher, and there's all kinds of stuff like that. College is like, yeah, that  
1060 just happened. What are you gonna do about it? And so I'm, I'm very  
1061 grateful that I was on the upper end of that, and I think it was because I  
1062 worked hard, but, um, what was the question? I keep ...

1063

1064 Interviewer:

1065 What did you get out of, or what are you getting out of that experience?

1066

1067 Nest:

1068 Yeah. So, yeah. I'm learning how to work hard, I'm learning, yeah this is  
1069 stupid, this sucks, but you can still get an A. You still- sucks but you can  
1070 do it. Work hard, you can- you can do it.

1071

1072 Interviewer:

1073 Okay. Now think about a subject or a class or something where you  
1074 were able to succeed without much effort at all, and tell me about that?

1075

1076 Nest:

1077 Um-

1078

1079 Interviewer:

1080 Oh, I cut myself.

1081

1082 Nest:

1083 ... (laughs).

1084

1085 Interviewer:

1086 (laughs).

1087

1088 Nest:

1089 I'd say, chemistry right now is the first example that comes to ... well,  
1090 almost all my classes in high school were, but ... chemistry right now. I  
1091 really don't feel like I've put in much effort at all. I do show up to class-

1092

1093 Interviewer:

1094 Mm-hmm (affirmative).

1095

1096 Nest:

1097 ... which is more effort than some people I guess, but I can, oh, my  
1098 teacher will start teaching, and I really feel like she's just, I feel like her  
1099 chemistry class is easier than my high school chemistry class was.  
1100 Maybe it's because I was a sophomore and now I'm a freshman in  
1101 college. Sophomore in high school, then. But, it just really seems easy.  
1102 She gives you all the equations on the test, and it seems like, you learn  
1103 how to plug in variables and like, shift them around and then solve for it,  
1104 like, just moving around equations. And that's really easy to me, all  
1105 seems, I can look at one example problem ... There's days in chemistry  
1106 where I could've walked in, sat down for the first 10 minutes and she'll  
1107 do example problems of that thing for the next 40 minutes, and I could  
1108 have left after the first one. I'll just stop paying attention. The tests, I  
1109 don't have to study for at all. I take the practice exam once, usually  
1110 know how to do it all. If I don't know how to do one, I'll see how to use  
1111 the equation again, that's about it. So, really, minimal effort and I know  
1112 that there's a lot of people that really struggle in that class. So ...

1113

1114 Interviewer:

1115 Okay. How do you feel about that class?

1116

1117 Nest:  
1118 I kinda feel like it's a waste of time. Uh, don't really think it's that  
1119 beneficial to my major, uh, but, I mean I don't hate it that much I guess  
1120 because it's easy.  
1121  
1122 Interviewer:  
1123 Mm-hmm (affirmative).  
1124  
1125 Nest:  
1126 So, it's not that much time, it's five credit hours, so, boost the GPA. So.  
1127 Definitely dislike it a lot less than my graphics class, and it's kinda  
1128 funny because graphics is two hours, and chemistry is five credit-hours.  
1129 And it's, you know, I have to show up to when my required time is to  
1130 show up are. And that's about all the effort that I put in for that.  
1131  
1132 Interviewer:  
1133 Okay. What are you getting out of that experience?  
1134  
1135 Nest:  
1136 Chemistry? Um, definitely not any benefits for my future, um, what am I  
1137 getting out of it? Uh, I've made some friends. I guess, I don't know if  
1138 you care about that but I've sat down, and I- I um, I teach a lot actually,  
1139 because I understand the information really well-  
1140  
1141 Interviewer:  
1142 Mm-hmm (affirmative).  
1143  
1144 Nest:  
1145 ... and then the people I sit next to sometimes aren't so smart, so then I'll  
1146 step them through the problems.  
1147

1148 Interviewer:

1149 Mm-hmm (affirmative).

1150

1151 Nest:

1152 And I think that's, that's something I need to get better at. Talking to

1153 people and things like that, so ... I guess that probably the most

1154 beneficial thing I've got through that is my teaching skills. Really

1155 helping people. But ...

1156

1157 Interviewer:

1158 Okay. And don't worry about whether or not I care if you're making

1159 friends in that class, just tell me whatever you think might be relevant.

1160

1161 Nest:

1162 Oh, okay. I just I mean, yeah. I mean, yeah, that's honestly one of the

1163 most beneficial things of that course. Is the friends I've made in my

1164 chemistry class. But yeah, that's about it, not really that much benefit.

1165

1166 Interviewer:

1167 Okay. So, I know you hate graphics more than you hate your chemistry

1168 class, but if you had to do another experience like, like these, would you

1169 prefer to take another like the graphics class or another like the

1170 chemistry class?

1171

1172 Nest:

1173 I mean, overall both of them, aren't, I feel like they... I'm not learning

1174 anything that really benefits me in either- either of them, then, I'd

1175 probably take another of the chemistry classes. I enjoy it more, well I

1176 just, yeah, when you don't have to really try it's a lot easier. So ... yeah

1177 definitely take another one of the chemistries. Where if you made it like,

1178 I don't know, if like graphics were some kind of complex industrial

1179 engineering thing where I use it in the workforce then I'd probably say  
1180 that. But I really doubt I'm gonna use that in the workforce.

1181

1182 Interviewer:

1183 Fair enough. Okay, now, think about people you know. Other students in  
1184 your classes and friend circles and such, and think about a student that  
1185 you know puts in a lot of effort to succeed. They do succeed, but they're  
1186 always working their butt off every time you look at them. What does  
1187 that tell you about how smart they are?

1188

1189 Nest:

1190 I respect them a lot, but I don't think they're, I think they're smart, if they  
1191 are succeeding I think they are smart, but, I don't think they're like,  
1192 naturally smart. I think that that information isn't their best thing. I- I  
1193 definitely wouldn't call them, like, dumb or anything like that, but I just,  
1194 I respect their work ethic but I don't think of them as that intelligent if  
1195 they really have to work that hard and do the same thing as a lot of  
1196 people just kinda cruise through.

1197

1198 Interviewer:

1199 Okay. Now, think about another student who- who ... [sneeze] excuse  
1200 me ... who does just cruise through and succeeds with very little effort at  
1201 all. What does that tell you about how smart they are?

1202

1203 Nest:

1204 Um, assuming they cruise through with A's, I- I'd generally think they're  
1205 a very smart person. I think that information clicks really well for them.  
1206 Kinda jealous of them I guess. But yeah, I- I'd definitely think they were  
1207 smart if they could go through a class and just not really try, and  
1208 everything, they just memorize everything and still when it comes up or,  
1209 just all clicks for them always? I definitely think that's a really smart



1210 person.

1211

1212 Interviewer:

1213 Okay. Now, tell me about a specific time that you received feedback that  
1214 you were not performing to expectation.

1215

1216 Nest:

1217 Academically?

1218

1219 Interviewer:

1220 It can be anything. Work, school, relationships, whatever.

1221

1222 Nest:

1223 Um, I played football in high school. And one of the first ever varsity  
1224 games I played, I went in there and our coach had always taught us one  
1225 thing, it's like, "Always do this, always do that." And I was never, like  
1226 the biggest, most fast, most athletic, most ... I knew what I was doing, I  
1227 was always pretty smart. But I went out there, and this big quarterback  
1228 just ran. And I ran straight at him and ... never do that. You always run,  
1229 you run parallel to him and chase him to the sidelines. They either have  
1230 to come to you, and you tackle him, or you dump in it, and I didn't do  
1231 that. I ran straight at him, burned me, he scored a touchdown. Literally  
1232 the game was ... that uh- the reason I was in the game was because we  
1233 were up by like, 60, but, I was just ... Coach took me to the sideline, just  
1234 tore me apart. I've always been upset, I still got a little upset just  
1235 thinking about that situation right there. But that's definitely something.  
1236 I got flustered in a high pressure situation, and just kinda didn't perform.

1237

1238 Interviewer:

1239 Okay. So, how did you respond to that feedback?

1240

1241 Nest:

1242 Um, I think I took it, um, I'm really glad that it happened. I'm glad that  
1243 my coach just took me aside and absolutely just tore me apart. And just  
1244 made me feel like an idiot. Because then, uh, just gave me a lot more to  
1245 work for. And then, you know, that failure, I just wanted to work, I  
1246 wanted to never do that again. I never made that same mistake again,  
1247 and it just made me better. So ... I- I think I responded pretty well to that  
1248 feedback. A lot of people don't, but, kind of the high school football  
1249 coach just, screaming at you in front of a crowd full of people looking at  
1250 you, just kinda gets you.

1251

1252 Interviewer:

1253 Okay. Do you think you have any long-term outcomes of your reaction?

1254

1255 Nest:

1256 From that. Hmm. That specifically? I don't know. I mean, I've, I  
1257 definitely hate making the same mistake twice.

1258

1259 Interviewer:

1260 Mm-hmm (affirmative).

1261

1262 Nest:

1263 And maybe that is from that. I almost never let myself do it, and if it,  
1264 when I make one mistake once, maybe I don't have to have the coach  
1265 yell at me because I'll yell at myself about it. I'll be like, "Why are you  
1266 sure an idiot, like, why would you do something like that." And that  
1267 could be academically or whatever. So, yeah. I think, I think that did  
1268 make an impact. I really hate making mistakes. So. I beat myself up  
1269 about them.

1270

1271 Interviewer:

1272 Okay. Did you learn anything from that experience?

1273

1274 Nest:

1275 Yeah. Um, well, yeah. D- don't give up, you know, you make a mistake

1276 keep working hard. You can get through it, it's gonna be okay. And

1277 you'll become, if you respond to it, the person yelling at you wants you

1278 to be better. So if you respond to it and listen to what they're saying, and

1279 actually work hard to make it better, then you'll become a lot better. I

1280 think I learned a lot from that. Went from that year, and made first team

1281 all-league the year after that. So I think I responded pretty well to the

1282 criticism. So, yeah.

1283

1284 Interviewer:

1285 Okay. What advice would you give to someone who's struggling to

1286 succeed in a similar situation?

1287

1288 Nest:

1289 Let- listen to the advice. Listen, eh- the reason that you're getting yelled

1290 at-

1291

1292 Interviewer:

1293 Mm-hmm (affirmative).

1294

1295 Nest:

1296 ... is because they think that you can do better. They think you can

1297 actually be a smarter person. Or, smarter, a better player, a better

1298 whatever you are. The reason someone's coaching you, pushing you to

1299 do better is 'cause they know you can do better. So take it as a

1300 compliment, and actually work and listen to that advice. Like, there's a

1301 reason it's happening.

1302

1303 Interviewer:  
1304 Okay. So, do you care if your peers think, or, if your peers judge you if  
1305 you do poorly at something?  
1306  
1307 Nest:  
1308 I really try not to, but I, yeah. I'm gonna care. I'm gonna care if my peers  
1309 are judging me or not. I try and surround myself with people that are  
1310 pretty good people, that aren't gonna like, you know, mock me about it  
1311 or whatever. Or, sometimes getting mocked about it is a good thing, so I  
1312 can be better and not make the same mistakes. But, I want to not care,  
1313 but I think I do care.  
1314  
1315 Interviewer:  
1316 Why do you think it matters?  
1317  
1318 Nest:  
1319 Them judging me?  
1320  
1321 Interviewer:  
1322 Mm-hmm (affirmative).  
1323  
1324 Nest:  
1325 See that's, uh, that's a really tricky thing. That's why I want to not care.  
1326 That's why I wanna be like, "Yeah I got a 60% on a test," and then my  
1327 friend, my smart friends would make fun of me, because I'd make fun of  
1328 them in the same situation. Just 'cause joking around, but-  
1329  
1330 Interviewer:  
1331 So, teasing more than making fun?  
1332  
1333 Nest:

1334 ... oh yeah. Definitely just teasing. Like, we- we all know each other are  
1335 smart so-

1336

1337 Interviewer:

1338 Mm-hmm (affirmative).

1339

1340 Nest:

1341 ... we just give each other a hard time about something stupid. But, yeah.

1342 So, I really don't think I would care, I- I've taken a lot of crap over a lot

1343 of times, but I think it would. I would be kind of upset. I'd just be like,

1344 "Man." You know. Kind of adds to my failure.

1345

1346 Interviewer:

1347 Okay. Why would you be upset?

1348

1349 Nest:

1350 I'd be more upset at myself 'cause I did poorly. You know, I made a

1351 mistake. So that's what I did wrong, that's what I ... I don't, I'm not upset

1352 with them. I'd, wh- who cares. I did bad, fine, they're making fun of me,

1353 doesn't matter. But, I made a mistake so they ... so then ... yeah. So then

1354 they now, so then they think of me as less intelligent I guess. You know,

1355 and I become less credible. Whatever. Stuff like that.

1356

1357 Interviewer:

1358 Okay. So, what about your professors. Do you care if they judge you if

1359 you do poorly?

1360

1361 Nest:

1362 Professors judging me when I do poorly... Kinda like the first question.

1363 Not really. I mean, I, it'd be odd for a professor for judging their students

1364 for doing poorly. But, really don't care. I mean, yeah, I don't want my

1365 professors to think of me as not smart, but, in at the end of the day,  
1366 they're just lecturing information to all of us. Giving us all the same  
1367 information, we're all taking the same test. My professor thinks I'm  
1368 really dumb, and I still get an A in his class, I really don't care what he  
1369 thinks of me. You know, if it's a one-on-one situation, it's a small  
1370 classroom? Yeah. Kinda weird if my professor thinks I'm a dumb ass  
1371 and asking stupid questions every day. But, overall yeah.

1372

1373 Interviewer:

1374 So, why do you not so much care if your professors judge you?

1375

1376 Nest:

1377 Um, I mean, I've never talked face to face. I have, four actual professors.  
1378 Three of them, guarantee, they wouldn't even, they couldn't put my  
1379 name to my face. 100% chance they didn't know what that is. Then my  
1380 one, so, that's why I don't really care if they don't know who I am. I'm  
1381 just a name to them. So, I- it doesn't really matter. I can still get an A  
1382 and the professor's just a grade. Professor is just what gets you the grade  
1383 in the class. In a one-on-one situation it would be good, but ... a  
1384 professor just listening to you? Not really. It doesn't really matter. What  
1385 they think.

1386

1387 Interviewer:

1388 Okay. Do you think you learn more from an experience that's  
1389 challenging or not challenging?

1390

1391 Nest:

1392 I think I learn from challenging experiences.

1393

1394 Interviewer:

1395 Why do you feel that way?

1396  
1397 Nest:  
1398 'Cause then, that's when you really get pushed. That's when you make,  
1399 you gotta make the hard decisions. That's when you gotta like, really  
1400 push yourself to understand something. So, you know, in the heat of the  
1401 moment. Really getting put in there. I think that's when I learn a lot.  
1402  
1403 Interviewer:  
1404 Okay. Do you care if you succeed during that experience um, after  
1405 knowing that you've learned from it?  
1406  
1407 Nest:  
1408 I would have like to have succeeded? But, no. I learned because I failed.  
1409 And it's better to fail early than it is to let- fail later, when it really  
1410 matters. So, yeah. No. I wouldn't care.  
1411  
1412 Interviewer:  
1413 Okay. So now that we've talked through all of these different ideas  
1414 related to motivation, and effort, and challenges, how would you  
1415 summarize what you've shared with me?  
1416  
1417 Nest:  
1418 In the whole? The whole-  
1419  
1420 Interviewer:  
1421 Mm-hmm (affirmative).  
1422  
1423 Nest:  
1424 ... all questions?  
1425  
1426 Interviewer:

1427 Mm-hmm (affirmative).

1428

1429 Nest:

1430 How would I summarize. Um, so, I've shared with you, that ... effort

1431 doesn't always lead to intelligence. That you can, you can be really

1432 smart and not put in a lot of effort, and you can be perfectly fine in all

1433 your classes. Um, that learning information isn't always the highest

1434 priority. That learning information is good when it matters, but, I don't

1435 always, you know, if it doesn't matter I definitely rather take an easy

1436 grade. Don't like putting in effort into things that don't matter. I really

1437 hate doing that. And, uh, that's what I felt like I do in a few of my

1438 classes, and then I'm not the most- and then, you know, motivatable

1439 experiences. If, when you fail at something, get embarrassed in front of

1440 a large group or something, that makes you do better. That makes you

1441 work harder. Become overall better.

1442

1443 Interviewer:

1444 Okay. Have you gained any insights from our discussion?

1445

1446 Nest:

1447 I think I have. Yeah. 'Cause I got a, I got a couple friends that aren't,

1448 they're not in any of the same classes as me. They're like in college

1449 algebra and stuff, and they're- they're struggling with their classes. And

1450 just, talking about the effort and stuff, put in. Someone working really

1451 hard, and you know. I have one specific friend come to mind that works

1452 really hard, and doesn't really get the highest grades. Y- you know. You

1453 gotta kinda put yourself in his shoes. You kinda feel bad for him. So.

1454

1455 Interviewer:

1456 Okay. So, is that most of what you've gained as far as insights? Or ... is

1457 there anything else.



1458  
1459 Nest:  
1460 I'd say that's the number one thing that just like, popped into my mind-  
1461  
1462 Interviewer:  
1463 Mm-hmm (affirmative).  
1464  
1465 Nest:  
1466 ... is I think about my friend that, you know, has put in a lot of effort, has  
1467 to work really hard. And they don't get that much benefit, and I guess  
1468 how grateful, how lucky I am I guess, to not have to put in that much  
1469 effort and do well. So, yeah.  
1470  
1471 Interviewer:  
1472 Okay. Is there anything else you'd like to share with me?  
1473  
1474 Nest:  
1475 To share with ... No, I don't, um, really think so.  
1476  
1477 Interviewer:  
1478 All right. Thank you.

1     **Interview Transcript 15: Oscar**

2     Interviewer: Allison Adams

3     Date Interview conducted: 11/16/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Alright. Our goal today is for us to have a detailed discussion about your

8     beliefs about or perceptions of the nature of your intelligence. The

9     discussion will inform my understanding of the perceptions of

10    engineering students and will help future decisions about the undergrad

11    of engineering experience and how it could be improved for all students.

12    And I wanna hear your own thoughts or perceptions, and I'm expecting

13    that will, they will be different from the thoughts of others. There's no

14    right or wrong answers. And to understand your perspectives, so I'll ask

15    questions like what do you mean by that? These types of questions can

16    end up being a bit awkward and may require you to reflect on what

17    you've experienced, so I will leave you long pauses after my questions.

18    Take your time, if you need clarification let me know.

19

20    Student:

21    Mm-hmm (affirmative).

22

23    Interviewer:

24    Any questions?

25

26    Student:

27    Nope.

28

29    Interviewer:

30    All right, tell me about yourself as a student.

31

32 Student:

33 So as a student, um, minoring in the mechanical engineering. I a little  
34 ahead of, like, the, like, schedule I have some AP classes, like, from  
35 high school. Um, I'm enjoying, like, college so far. I'm doing the  
36 engineering graphics course, which I really enjoy. Um, [course number].  
37 And I'm gonna be in [intro to mechanical engineering] next semester.  
38 I'm, like, really... like a lot of people change their major but, like, I'm  
39 really, like, set in my major. I'm really liking what I'm doing and, like,  
40 I'm looking forward to, like, statics and, like, thermodynamics 'cause,  
41 like, that stuff really interests me, so. I'm excited for, like, my, like,  
42 education to come. Um, as far as, like, my student, like, habits, like, I go  
43 to class pretty regularly. I try my best not to, like, skip. Um, studying,  
44 like, I never really needed to study in high school but I'm, like, starting  
45 that now. Um, 'cause, like, exams get harder and stuff like that. You  
46 know?

47

48 Interviewer:

49 Okay. So, what excites you most so far about engineering?

50

51 Student:

52 Um, I mean, like, I grew... like, my father was at your... is a software  
53 engineer. Um, and, like, I sort of grew up with, like, the, like, problem  
54 first mentality where it's like you identify the problem, you figure out,  
55 like, what needs to be fixed, then you can come up with a solution pretty  
56 easily if you can define it well. And, um, I like, I like, uh, engineering  
57 because, like, like a lot of the times they do, especially in [engineering  
58 graphics], like, we're presented with a problem and we have to find a  
59 solution, like, make some solution. Not to see if some work better than  
60 others but I like the sorta, like, freedom to, like, find solutions to  
61 problems given to me.

62

63 Interviewer:

64 Okay.

65

66 Student:

67 Mm-hmm (affirmative).

68

69 Interviewer:

70 If you were to describe yourself as a student using adjectives or  
71 descriptions, what would you tell me?

72

73 Student:

74 Um... relaxed. I don't really stress. Like, I mean, I, like, stress, like,  
75 internally about things but, like, as far as like my actions, like, I don't  
76 need to, like, be studying for, like, three to four hours a day. Um, at least  
77 at this point. Um... fairly average. Like, I do, like, pretty okay in classes  
78 like A, B, stuff like that. Um, nothing, like, particularly, like, I'm getting,  
79 like, 100% on my calc two exams but, like, and I'm passing and doing  
80 okay with it. Um... I don't really know other adjectives that'll describe it.  
81 Um... I don't know, just excited. I'm just excited to, like, learn more, you  
82 know?

83

84 Interviewer:

85 All right. What does it mean to you to be a relaxed student?

86

87 Student:

88 Um, I mean it... it, it's nice, um, I'm sorta, like, lucky in the sense that,  
89 like, I can, like, learn very easily from, like, a lecture so long as I just  
90 show up to class. Like, I don't have to worry too much. Um, like, it's like  
91 it means, like there's, I can focus more on, like, other things in my life.  
92 Um, I don't have to, like, spend so much time studying. Um, like, I have  
93 a bunch of hobbies like boxing and chess, stuff like that. Like, I'm really,

94 like, into that stuff. I can like, like enjoy things more. Um, and then also  
95 it, like, helps me, like, enjoy school because it's like if I can just, like,  
96 pick it up from, like, the teacher then, like, I don't have to, like, spend  
97 hours laboring over it. Like, it's not something that's, like, is a, like, time  
98 consuming challenge more like a thought-provoking challenge. Which  
99 is... like, I find far more interesting.

100

101 Interviewer:

102 Okay. What does it mean to you to be an excited student?

103

104 Student:

105 Um, I mean, like, I think, like, to the extent, like, it's just, like, where I  
106 show my passion. Um, now I, like, I was really I'm, I'm, something that  
107 I, like, went to college and it was that I found really interesting, it's that  
108 it's way better than high school because I'm, like, surrounded by other  
109 people that are passionate about their education too then high school  
110 were it's, like, most kids are apathetic towards these things. And um, so  
111 like, getting excited about it and being surrounded by people that are  
112 excited about it just, like, makes it a much more, like, happier, like,  
113 situation. Like, I remember, like, English classes back in high school,  
114 like, nobody would, like, answer the teacher's questions 'cause, like,  
115 nobody really wanted to be there. But, like, engineering graphics, like,  
116 we're, like, collaborating and we're, like, working together to find, like,  
117 good solutions. Um, and it's also just, like, motivational. Like, if I wasn't  
118 excited about, like, my studies, like, I probably would end up changing  
119 my major, um, to find something I am excited about because, like, if I'm  
120 not excited, there's no passion there and I don't really want to be here for  
121 something I'm not passionate about.

122

123 Interviewer:

124 Okay. What does it mean to you to be passionate about something?

125

126 Student:

127 Um, I, like... I just think it's, like, what you find interesting. Like,  
128 something that I can't, like, I've actually thought about it a little bit. It's  
129 like why do, like, certain people, like, find things interesting? Um... like,  
130 it's just, like, I feel like development, like, just growing up, like, certain  
131 people just, uh, latch on to things and for me that was engineering. For,  
132 like, some people... like, I have a friend who, like, she really likes art  
133 and she wants to, like, become a graphic design, stuff like that. Um, it's  
134 just what you... it's, like, what stimulates your brain. Like, what you,  
135 like, enjoy doing and, like, are somewhat good at.

136

137 Interviewer:

138 Okay. Let's say hypothetically you have class now and you get an exam  
139 back. And you look at that exam and feel like you succeeded on it. And  
140 how do you respond?

141

142 Student:

143 Um... why's that I, like, I mentioned earlier, like, I'm relaxed into my  
144 actions but, like, internally I didn't, like, sorta like stressed out kids, I  
145 just think a lot. Um, and, like, that sorta, like, relieves the stress than of,  
146 like, I've set, like, a buffer of, like, points where it's, like, if I... if that  
147 test put me at, like, like a good, like, percentage of the points of, like, the  
148 semester, like, filled up. Like, and I don't have to worry too much about,  
149 like, the upcoming assignments that much, um... it's just, like, relieving.  
150 Just so, like, I don't have to, like, internally, like, think about, like, like,  
151 allocate, like, like thought, like, to what I'm doing that much, yeah.

152

153 Interviewer:

154 Okay. Why is that your reaction?

155

156 Student:

157 Um, because I mean, like there, like, uh, like, especially like, the classes  
158 that I don't like now, like, I'm in economics, um, macroeconomics. Like,  
159 if I were to, like, get a test, like, very good grade I'm not, like, maybe a  
160 different reaction, like, I don't want to focus on this thing. Like, I don't  
161 really care for it. Like, like, it's macroeconomics, it's not what I want to  
162 do. Um, it's just, like, a gen that I have to take. Now, if it's a class that I  
163 do like, it's relieving because, like, it shows that I'm, like, where I need  
164 to be with, like, the knowledge for that class. Because, like, one of my,  
165 like, big things that, like, if I get, like, like left behind by, like, my peers,  
166 like, then I'll look less valuable to, like, the workforce, like, things are  
167 going to be much harder for me. And so, like, having a, like, knowledge  
168 that I'm where I need to be at that class, like, that's really relieving.

169

170 Interviewer:

171 Okay. What do you consider to be a success on an exam?

172

173 Student:

174 Um... I don't know, it depends, it depends on, like, a bunch of variables.  
175 Like, the first one I would say is, like, the class. Um, like, I'm in calc  
176 two right now and, like, those tests are a lot harder, like, I'm averaging,  
177 like, around 70s, like, a 70 or above on that, um, class. And, like,  
178 whereas, like, macroeconomics, like, it's a fairly easy class. Um, so, like,  
179 I'm averaging, like, 90 in it, um, on the exams. And so, like, that's, like,  
180 one measure where it's, like, the actual difficulty of the class. And the  
181 sort of like second measure I go to or if it's, like, I do do bad, like, I'd  
182 say, like, 90 and above, like, I'm not gonna worry at all. Like, that's, like,  
183 pretty successful. Um, and it's, like, if it's a difficult class and, like, I do  
184 get, like, 70s, like, I'll look to the average and be like, where am I ranked  
185 against my peers? Like, how good am I compared to, like, everybody  
186 else in my class? Am I just falling behind on information while

187 everybody else is picking it up? Or is everybody just having a tough  
188 time picking it up? And, um, so I'll look at, like, the test averages and  
189 look at the curves, stuff like that.

190

191 Interviewer:

192 So, a grade curve would probably affect how you view your success?

193

194 Student:

195 Um, yeah because, like, there's like, with like, learning, with learning  
196 there's, like, a bunch of variables into it. Like, personal and, like, non-  
197 personal where it's, like, stuff that, like, everybody has, like, like a bad  
198 professor can really make people do bad on an exam. Not, like,  
199 conveying the information well. Um, and so by, like, having, like, that  
200 curve there to show that, like, oh everybody is doing bad, like, then I  
201 don't feel bad on myself. Like, I don't, like, fault myself with that. I  
202 fault, like, the outside variables. And um, yeah.

203

204 Interviewer:

205 Okay. So, how would you react if you did better on that test than  
206 someone that you consider to be smarter than you were did?

207

208 Student:

209 Um, I don't know. Like... let me think on that. I- I'd probably, like, be,  
210 like, a little bit more proud of myself but at, like, the end of the day, like,  
211 I, I just, like, sort of consider, like, it to be... like, I just did good on the  
212 exam. I don't know so, like, I compare myself to others when it's... when  
213 I'm, like, doing bad. Um, because, like, that's, like, a measure of, like,  
214 you need to catch up. But when I'm, like, doing good, like, I don't really  
215 compare myself to others. I just, like, sort of breathe in, like, oh I did  
216 good. Like, this is something I can, like, relax on now.

217



218 Interviewer:

219 So, you might not care as much as, uh, about, about what someone else  
220 did even if they were smarter than you are?

221

222 Student:

223 Yeah. Pretty much. Um, like, I, like, my, like, the, the sort of, like,  
224 motivation for, like, caring about, like, my, like, test grades is, like, part  
225 of it is fear. Where it's like I'm fearing, like, I'm being left behind so if  
226 I'm not having that fear, like, it doesn't become, like as prevalent of like  
227 a, like a magnitude of emotion.

228

229 Interviewer:

230 Okay. Well, what if instead of you considering them smarter than you  
231 are, they thought they were smarter than you are?

232

233 Student:

234 Um, I don't know. One thing, like, I don't really associate with people  
235 that, like, I can sorta get that vibe from. That, like, that they think they're  
236 smarter than me. Um, I had, like, I like, there was a kid that hung out in  
237 my friend group, uh, in high school and, like, just in conversation, like,  
238 it sorta, like, came off as, like, pretentious. Like, he, like, always, like,  
239 was trying to correct me. Like, he would say he's smarter than me. Like,  
240 he would believe he was right without having to, like, prove to himself  
241 that he was right in, like, conversation. Um, so that would get him in,  
242 like, some weird situations where he was actually wrong and I was right.  
243 Um, and so, like, I try to not associate with people like that. Um, like,  
244 yeah it would, like, bug me a little bit if they were, like... I don't know,  
245 like, trying to, like, discredit my, like, ability. But, at the end of the day,  
246 like, I just wouldn't really talk to them. Like, I just wouldn't care.

247

248 Interviewer:

249 Okay. Would you share with anyone else that you did well on the exam?

250

251 Student:

252 Um, only my close friends. Like, we talk about, like, how we're doing in

253 school a lot. Um, and one of my friends, like, he, like were dorm mates.

254 We've been friends all through high school. Um, he, like, he already

255 took calc two. He's in calc three right now. And, um, so, like, getting,

256 like, a sense of, like, like, like, just being able to talk about these

257 mathematic things with him. 'Cause I really like calculus and it's like

258 talking about, like, how I did on the exam, like, what we did on the

259 exam, stuff like that. Like, listing, going through the problem set I

260 missed, like, with him, um, is really helpful and fun. Um, yeah, that's

261 pretty much it. Just my close friends.

262

263 Interviewer:

264 Okay. Why do you feel comfortable sharing with them?

265

266 Student:

267 Um, well I can trust them. For one, like, I know if I do bad, like, they're

268 not gonna, like, like, I would say they're not gonna fall through the floor,

269 that's not necessarily true. They're not going to, like, berate me for it.

270 Um, and if, like, it's a good check to, like, be like, if I'm sort of, like,

271 delusional thinking I'm doing good but actually doing bad, like, if I'm

272 doing bad consistently they'll call me out on it. They'll be, like, you

273 probably should study for these things more. Um, and then also, like,

274 just being able to go through and, like, review and talk about, like, like,

275 it's really nerdy, my friend who already did calc two, like, we talked

276 about, like, um, like, he was really excited for me to learn the ratio and

277 root tests. Um, 'cause that was his favorite part of calc two. And so once

278 we, like, learned it we could, like, talk about it more and stuff like that,

279 yeah.

280

281 Interviewer:

282 Okay. So, why might you not share it with people outside of that group?

283

284 Student:

285 Um, I mean one reason is that, like... I don't know. It's, it- it seems like

286 unnecessary. Um, like, if people, like, ask me and they'll lead with, like,

287 "oh I got this on the exam, like, what did you get?" Like, I'll probably

288 tell them. Um, but, like, it just seems, like, to go out and, like, tell

289 somebody, like, it seems, like, weird to me. It seems like I'm trying to,

290 like, prove I'm better than them. But, like, it's, like, a risk, like, if you tell

291 them your grades. It's like...like, I don't... I would... I just don't have a

292 reason to tell other people. Like, I don't, I don't want to or I can't really

293 just, like, um, converse with them on the same level as, like, my friends

294 'cause we have, like, prior knowledge of each other. Um, it would just

295 seem, like, weird to me just to be, like, hey I got this on the exam, like,

296 what did you get? And, like, you know?

297

298 Interviewer:

299 So, it's not that you'd hide it so much as you just not bring it up in

300 conversation?

301

302 Student:

303 Yeah. Yeah.

304

305 Interviewer:

306 Okay. W- what about if you got an exam back and you didn't feel like

307 you had succeeded on it? How would you react to that?

308

309 Student:

310 Um, well that's sorta, like, gets to the internal stress, like, going. Um,

311 that's where it starts to, like, tell me if, like, maybe I should start  
312 studying for these things. Um, maybe I should start to, like, pay more  
313 attention in class and taking more detailed notes. Um, like, that's where,  
314 like, the, like, stress sorta rises and it's like, all right I have to think about  
315 this more. I have to, like, think about, like, think about my time better,  
316 like, in class. Um... yeah, it's just, it's just, like, so as far as, like, this is  
317 starting to become a problem, like, you should probably not let this  
318 happen again.

319

320 Interviewer:

321 Okay. Why would that be your reaction?

322

323 Student:

324 Um, like, one, like, I don't want to fall behind my peers. Like, um, like,  
325 if I do bad on this exam, like where I'm, like, below the average per se,  
326 like, I would not want to be in that position where I'm doing worse than,  
327 like, falling behind everybody else and that's not where I want to be.  
328 Um, and then... like, just, like, a personal thing, like, I was, like, raised  
329 to, like... with a, like, very strong importance on education and, like,  
330 they'd be like, I'd get a 100% on a test and my dad would say, like, "why  
331 not 102%?" And, um, so, like, through that I'd be... it's just sorta like,  
332 sorta like wrong internally to, like, let myself fail at these things. Like,  
333 to not push myself harder, to do better.

334

335 Interviewer:

336 Okay. What if you found out that the other students in the class did  
337 much better than you did?

338

339 Student:

340 They did much better than I did?

341

342 Interviewer:

343 Mm-hmm (affirmative).

344

345 Student:

346 Um, yeah that would be... that'd be, like, extremely stressful. Like, that's

347 where it would be the point where it's, like, all right I gotta pick it up.

348 'Cause even, like, if they, like, approach the average, that's where, like,

349 the stressor, like, starts to build up a little bit. Um, but, like, if I was

350 behind it, like, yeah that's the part where I just, like, start, like, uh,

351 breaking down and, like... not breaking down. That's a bad word choice.

352 Like, cracking down on, like, my habits and, like, start studying more.

353 Um, like, just, like, actually spend three to four hours a day studying,

354 like, just to make sure I can do good on the next exam and the one after

355 that. Um, I would really, like, ramp it up, just, like, my effort in the

356 class.

357

358 Interviewer:

359 Okay. What if you found out that you didn't do as well as someone that

360 you don't consider to be as smart as you are?

361

362 Student:

363 So, I did worse than someone that I don't think consider to be as smart as

364 I am?

365

366 Interviewer:

367 Mm-hmm (affirmative).

368

369 Student:

370 Um... I don't know. Like, for me, it's so... like, I don't like putting, like,

371 that sort of, like label on people. Um... like, it, it's just weird. I don't, I

372 don't know how to measure, like, if someone is, like, smarter than or not.

373 Um, if, like... I don't know. It's weird. It's like, I don't, I don't like, like,  
374 my problem is with the question. Like, I don't really have, like, a way of,  
375 like, defining, like, someone that's, like not as smart as me. I think that,  
376 like, anybody could be as smart as me. Um, like, given the same, like,  
377 background I have. Um, like, just, like being raised, like, in a good  
378 neighborhood, stuff like that. Um, and I think that, like, even, like,  
379 without the same background, they could still be as smart as me. So like,  
380 so like, qualifying that is, like, weird. But, like, if... I don't know, like, if,  
381 like, let's say, like a five year old did better than me, like, somebody that  
382 doesn't have, like, as much experience, like, I would probably, like,  
383 reevaluate, like, all right what am I doing here. Um, like, what is  
384 actually went wrong. That's where it's, like, I need to really crack down,  
385 like, just the magnitude of... what's happening. Like, why is this  
386 happening? Um, that's where I need to really think about, you know?

387

388 Interviewer:

389 Okay. What would you share with anyone else that you didn't do well on  
390 an exam?

391

392 Student:

393 Um, I'd that one I would probably try to hide more. Um, like, from  
394 people, like, I just don't want to be judged, like, as, like, like  
395 unintelligent. Um... because, like, I feel like a lot of people don't carry  
396 the same sentiment that, like, I care where it's, like, not defining that,  
397 like, you're smarter than people or people are, like, more dumb than you.  
398 Um... like, people can, like, can be pretty mean and they can, like, box  
399 you in pretty easily if you, like, just perform worse and... like, so that  
400 would be, like, a, like, another variable I'd think about. Like, will this  
401 person think less of me because I, like, did worse?

402

403 Interviewer:

404 Okay. Would you share with anyone else that you didn't do as well as  
405 that person that might not have been as experienced as you?

406

407 Student:

408 Um, probably my friends. Um, I don't know, I, like, just whenever, like,  
409 talking about things, like, I like to give them the most, like, my thoughts  
410 on it and then see their thoughts. Like, give them the best representation  
411 of what I'm thinking so that they can, like, develop, like, their own  
412 thoughts based off of what I'm thinking and their own background and  
413 experience. Um... 'cause, like, maybe, like, I just don't know and that's  
414 kids like a kid genius. Like, maybe there's something that, like, I just  
415 don't know. I don't have, like, a proper read on the situation that they do.  
416 Um, yeah, I would tell my friends that, yeah.

417

418 Interviewer:

419 Okay. So, does it matter to you if your peers think you're smart?

420

421 Student:

422 Um... well, this is sorta... this is sorta like a weird... I have a weird  
423 answer to this. Like, I don't care if they think I'm smart, I just care if  
424 they... that they don't think I'm dumb. Like, as long as they, like, respect,  
425 like, the... like, that I have, like, intelligence to a degree, like, that's fine.  
426 Like, they just have to respect it. They don't have to, like, appreciate it  
427 particularly, but, like, once they start thinking, like, I'm unintelligent or  
428 I'm, like, lacking intelligence, like, that's where I start to have a problem.

429

430 Interviewer:

431 Okay. Why do you think that's the case?

432

433 Student:

434 Um... I don't know. Having like, having like, like, particular intelligence,

435 like, more than the average person, like, that's just a benefit. Like, that's  
436 just something that, like, will help somebody, like, anybody. But like,  
437 having a, like, detriment of being more unintelligent, like, that's, like,  
438 detrimental. Like, that's something that, like, you'll be judged upon by,  
439 like, your peers. And so, I don't want to be, like, criticized by my peers  
440 for that and given like a lack of respect because of it.

441

442 Interviewer:

443 Okay. What about your professors? Do you care if they think you're  
444 smart?

445

446 Student:

447 No. Um... in calc, like, I did calc one in high school and my teacher  
448 there, like, like... it was a pretty small class. It was only, like, 12 of us.  
449 And so I would, like, I would, like, try to answer a lot of questions and,  
450 um, I think, like, exposing, like, my lack of knowledge, my lack of  
451 intelligence on the subject to my professor only lets them do their job  
452 better because then they can know where to, like, teach me. Like, they  
453 can know, like, how to help it.

454

455 Interviewer:

456 Why do you think that's the case?

457

458 Student:

459 That I would, like, tell them? Or that, like-

460

461 Interviewer:

462 That you feel that way about it.

463

464 Student:

465 That I feel that way? Because, like, at the end of the day, like, the



466 professor's there to help me learn and I want to learn. Like, I want to  
467 know if I am, like, wrong from somebody that can teach me. Like, that  
468 they can teach me right, um, and, like, 'cause I don't want to, like,  
469 continue on, like, thinking, like, the wrong thing or the right thing is  
470 wrong or other way around, the wrong thing is right. Um, I want to,  
471 like... know for certain, like, this is the right thing and it's right because  
472 of this and, like, exposing myself to the professor, they can correct  
473 whatever's wrong.

474

475 Interviewer:

476 Okay. What motivates you to keep pursuing an engineering degree?

477

478 Student:

479 Um...

480

481 Interviewer:

482 [Cough] Excuse me.

483

484 Student:

485 Like, I mean, I've had, like, past experience, like, working in, like,  
486 assisting, like, engineers. Like, one of my first jobs was I, uh, assisted  
487 this guy who is a mechanical engineer and, like, he retired but, like, it  
488 was because his, like... the companies weren't, like, the wing that they,  
489 like, had in Kansas, um, like, shut down. And so, like, they were gonna  
490 get rid of all their equipment and so he offered to just, like, haul out and  
491 take it. Like, like, big equipment, like, blades and steam mills and stuff  
492 like that. And so, um, through my school's robotics team I met him and,  
493 like, I just interned for him and, like, operated machinery and, like, saw  
494 him, like, designing, like, material. Like, he would customize, he  
495 would... it was just a whole business so that he would make custom parts  
496 that you can't buy at Home Depot. And, um, like, so, like, just seeing

497 him do his work, like, was, like, really inspiring and interesting. Um,  
498 and then also, like, I don't know, just... I really like the, like, sciences.  
499 Um, I really like having, like, defined answers, like, things that work.  
500 Um, like, like, sort of like, with my distinction between, like, the science  
501 and an art is, like, an art doesn't have, like, an, like, an answer. Like, an  
502 art is answerless because you can't, like, be like, oh make a painting  
503 here's the answer for it. You just do. There's no, like, answer to it.  
504 Whereas, like, science is like there are... there's an answer or there are,  
505 like, multiple answers but it's, like, definite. And so, I really like these  
506 sciences because I can, like, search for those answers, like, find, like,  
507 what I need to do given any problem. Um, and, like, mechanical  
508 engineering, like, it's physics based which is, like, one of my favorite  
509 sciences because I like math. Um, and it's, like, I don't know, like,  
510 thermodynamics, materials, like, controls, like, all the things just, like,  
511 seem really interesting to me.

512

513 Interviewer:

514 Okay. So, if you were to make a pie chart of your motivations as a  
515 student, what percent would you say you're motivated by your grades  
516 versus your desire to learn?

517

518 Student:

519 Um... at this point, I'm motivated by my grades, I would say, like... if  
520 those are the only two variables on the pie chart, I'd probably say I'm m-  
521 motivated by my grades by, like, 70% grades, 30% desire to learn  
522 because, like, right now, like, I'm in the stage where I have to take, like,  
523 all my gen eds. Like, I have to do good on these, like, for prerequisites,  
524 uh, to the, like, really interesting classes. And so, like, I'm motivated to  
525 learn in the future. Like, I'm motivated to learn, like, when I get to, like,  
526 statics and, like, thermo in my, like, sophomore or junior year. Um, like,  
527 those are, like, what I'm motivated about but, like, right now I have to,

528 like, push through all the, like, general stuff and those, like, I can really  
529 go motivate my grades. Like, there's no way I'm gonna be, like, excited  
530 about macroeconomics.

531

532 Interviewer:

533 Okay. So, are there classes that that's not true for?

534

535 Student:

536 Yeah. Like, um, engineering graphics, like, [course number]. That one I  
537 really enjoy. That one, like, like, that one also you, like, need because,  
538 um, they grade particularly, like, strictly in that. Like, they have, like...  
539 it's very strict attention to detail because you're, like, drawing lines,  
540 you're, like, designing parts on the computer. Um, like, it's very easy to  
541 be, like, oh this line isn't perfect, like, point off. So, I sorta like, not  
542 necessarily gave up on my grade but I gave myself more, like, mental  
543 leeway because the averages were also, like, pretty low in that class so,  
544 like, on the homework. Um, and so, like, with that one, like, I sorta, like,  
545 fell into this, like, frustration, like, I'm never gonna be able to get, like,  
546 my grade, like, to be, like, where I want it to be so I'm just gonna, like,  
547 enjoy it for what it is. And, like, once we got through to the computer  
548 stuff and even sketches, like, it was, like, it's so fun. Like, I love just,  
549 like, like, being told, like, "make this part." And I, like, model out,  
550 design it, put all the dimensions to it, like... it's just, like, really fun. And  
551 our final project is to, like, model out a bunch of parts. Um, like,  
552 assemble them to make a Stirling engine and then, like, uh, dimension  
553 all the parts. And so, like, I'm really enjoying that. It's like a pretty time  
554 consuming project but, like, it doesn't feel like it because, like, I love it,  
555 like, it's just, it's just fun. Like, it feels like I'm playing a video game  
556 almost. And, um, that one, like... so that one I'd say I'm more motivated  
557 by my, like, desire to learn other than my grades. And then, calculus,  
558 um, I really like calculus and that's sort of, like, the same boat. Like, my

559 grades definitely not where I want it to be right now but, like, so is  
560 everybody else's so I'm, like, okay with that. Um, and, like, just learning  
561 new ways to, like, manipulate, like, math, manipulate numbers, like,  
562 summations, like, fun stuff with, like, the integral. Like, it's interesting,  
563 like, to see, like, the tools that I can have that I, like, never thought were  
564 possible. Like, like, it feels like I'm learning, like, knowledge. It feels  
565 like I'm cheating math, like, when I learn calculus. And I think it's just,  
566 like, so cool. And, um, that one I definitely, like, am more motivated to  
567 learn, like, what to do rather than, like, by my grade.

568

569 Interviewer:

570 Okay. You mentioned w- are those the only two? What if I said no, you  
571 can fill in some more motivations if you want to. What will you put  
572 there and how would the distribution change?

573

574 Student:

575 Um, more motivations... let me think... I'd probably say, like, um,  
576 another one is, like, usefulness, like, to, like, my future career. Because,  
577 um, I personally, like, really am interested in material sciences. I can't  
578 wait to be in, like, basic materials and, like, I've got these, like, sister  
579 class with that. Um, but, like, I really just cannot wait for those classes,  
580 like, it's just, like, really interesting stuff for me from what I've  
581 researched on my own. And, um, so, like, there's another class that I'm,  
582 like... I've, I've, like, planned out all my semesters that, like, all the  
583 classes I want to take. And, like, I threw in another class in there, like,  
584 an extra class I don't have to take but I am because it's, it's like, um, it's  
585 basically materials two. And so because, like, that's what I want to do,  
586 like, later in life, like, work with materials and material sciences, like,  
587 that one I would value as, like, like, part of that pie chart would be it's  
588 useful to, like, my career going forward.

589

590 Interviewer:

591 Okay. In what ways are your grades important to you?

592

593 Student:

594 What ways are your grades important to me? Um... I just think they're,  
595 like, a measurement of, like, where am I at in this class? Like, what am I  
596 expected to learn? Um, and, like, what am I expected to, like, to just be  
597 at really. It's just a measurement of am I learning the content that they're  
598 giving out, like, at a reasonable rate? You know?

599

600 Interviewer:

601 Okay. What about learning? In what ways is that important to you?

602

603 Student:

604 Um, learning is important to me 'cause, like, I don't know, I just think,  
605 like, the world is sorta, like, crazy. Just, like, the, like, the way things  
606 happen. Like, why is the speed of light, like, what is is? Why are certain  
607 things the way they are? And, like, they're, like, those questions that,  
608 like, are sort of unanswered and, like, thought compelling. And, um,  
609 like, learning, like, I feel, like, learning, like, more, like, complex stuff,  
610 like, in the sciences, like, lets you sorta, like, understand, like, the crazy  
611 world, like, a little bit more and make it seem less crazy. Um, like, once  
612 I learned, like, like, learned about, like, chemistry and, like, atoms and,  
613 like, atomic structures and stuff like that, like, I was like, wow, like, this  
614 is, like, a pretty cool, like, world that we live in, like, the, like, carbon  
615 dioxide, like, being pushed into the ozone. That's not cool but, like, the  
616 concept of it that, like, certain, like, things just happen because of, like,  
617 these natural forces. Like, I just think that stuff's really cool and learning  
618 helps me understand it and, like, appreciate it more.

619

620 Interviewer:

621 All right. So, let's say you're enrolling for classes next semester and  
622 there's a class that you need to take and you have two options of lecture  
623 time with both taught by different professors but both work for your  
624 schedule. And you at least know these rep- professors by reputation if  
625 not having had a class with them before. Um, professor A, you know  
626 that you're gonna have to put in a lot of effort to succeed in that class,  
627 like, work your butt off to get a good grade and stuff. But you're gonna  
628 have learned a lot when you come out of it. And then, professor B you're  
629 not gonna have to work nearly so hard, it's gonna be pretty easy class but  
630 you might not have learned as much at the end. Which one would you  
631 enroll in?

632

633 Student:

634 Um, I mean, like... like, if it's a class that, like, I'm, like, passionate  
635 about, like, I would probably go for pr- professor A. Um, 'cause, like,  
636 work, like, doesn't like, what I mean is like, work doesn't feel like work  
637 if you enjoy it. Like, like I am, like, enjoying, like, this, like, better  
638 understanding of the subject material, like, I'll be definitely willing to  
639 put in more effort for it. Like, um, especially 'cause, like, I don't have to  
640 put much effort in now. I have a lot of... a lot of, like, space, a lot of  
641 effort that I could be putting into things, like my studies. And so, um,  
642 like, I definitely would choose professor A. And, like, even, like,  
643 reflecting on my, like, next semester, like, um, I'm doing, like,  
644 engineering physics one next semester and, um, er, yeah next semester  
645 and I have it with Bolton. And what I've heard and, like, is that Bolton  
646 is, like, a lot more difficult where he doesn't like... he'll present you with,  
647 like, the knowledge you need to know but he won't, like, he won't tell  
648 you how to apply it. Um, he wants you to figure that out because that's  
649 how you, like, actually learn how to use it. And that's just what I've  
650 heard from, like, people, like, that I've, like, talked to. And, like, I don't  
651 know, that's sorta like exciting because, like... like, once, like, if I, like, I

652 can only, like, apply something, like, you can only apply something if  
653 you, like, fully understand it. And I think that, like, sort of a necessity to  
654 have to apply it, like, will make me fully understand it, which will, like,  
655 only just help me into my future.

656

657 Interviewer:

658 Okay. Can you think of a situation where that answer might change?

659

660 Student:

661 Oh, if it's a class that I'm not passionate about. Like, um, I... I have to  
662 take, uh, like, some appreciation of architecture class to get some, like,  
663 [university requirement] out. And, um, like, I couldn't care less about  
664 architecture, like, (laughs) it's like, it's just not interesting to me but I  
665 have to just do it for, like, a certain requirement to put upon me to get  
666 my degree. Um, and, like, I would definitely go with the easier professor  
667 just so I can, like, focus more on, like, my more, like, interesting classes.

668

669 Interviewer:

670 Okay. Now, tell me about your learning and studying strategies.

671

672 Student:

673 Learning, um, like, showing up to class and taking notes is really  
674 helpful. And, like, my teachers used to do it in high school but, like,  
675 teachers posting their notes online has been really helpful. Um, like, just  
676 getting, like, the PowerPoints, like, on my computer was really nice.  
677 Um, so, like, in class, like, yeah I'll take detailed notes, I'll listen, like,  
678 I'll do all the, like, example problems. Like, I'll just l- l- just try to keep  
679 engaged, like, all class. Um, outside of class, like... I don't know, my  
680 vote, like, I studied for, like, the first time this semester, like, this week  
681 'cause I had a bunch of exams this week. And, um, like, my macroecon  
682 class, like, I didn't quite understand, like, the weird names, like, all that

683 the variables had. And it's just, like, I just went through the slides again  
684 and re-took notes. I just re-wrote done everything and, like, kinda see,  
685 like, without, like, looking at my old notes and try to see if, like, I picked  
686 up anything that I missed there and, like, it did help a bit. Um, it did,  
687 like, it was sort of, like, a refreshing the, like, class without somebody  
688 lecturing it to me. Um, other than that I don't, like, study very often.  
689 Like, I- I- pick things up pretty well from just, like, listening to people  
690 tell me... telling me things. Like, I really love, like, Khan Academy  
691 videos. Like, or, like, just, like, there's, like, a bunch of videos on  
692 YouTube were they just talk about sort of, like, cool things in  
693 mathematics, like, what's rad negative one to the power of rad negative  
694 one, stuff like that. And so, just, like, listening to people, like, tell me  
695 these things, like... that's just how I learn best.

696

697 Interviewer:

698 Okay. How do you come to use those methods?

699

700 Student:

701 Um, how did I come to use those methods? I don't know, it's sorta, like,  
702 like, a... I guess it goes back to sorta, like, relaxed where it's, like, like,  
703 once somebody tells me something as long as I understand it from them  
704 telling me it and I do, like, I can just, like, think back to, like, what are  
705 the sorta key things they told me to look out for? Like, what are, like...  
706 in, like, an eq- or in a equation, like, what are the variables and what do  
707 they mean? Like, what are their units? What are their, like, what are they  
708 actually doing in this equation? Um, and that just, like, helps me, like, I  
709 don't know. Just, like, I look for those variables and I just plug them into  
710 the equation. Like, it's just what I need, you know?

711

712 Interviewer:

713 Okay. How have your studying and such methods changed over time?



714  
715 Student:  
716 Um... it... as a kid, like, um, especially, like, elementary and middle  
717 school and a little bit of high school but, um, mostly elementary and  
718 middle school, like, I would just not, like, pay attention in class at all.  
719 'Cause it was, like, it was, like, trivial stuff. It was, like, addition,  
720 division, like, once long division came in, like, that's where, like, things  
721 sorta, like, kicked into gear. But, like, things were, like, trivial, like, my  
722 father could, like, test me on it, like, he'd like, in the car he'd be like,  
723 "what's nine times eleven?" Stuff like that. He'd just, like, like, test me  
724 on, like, multiplication tables and, um, I would not pay attention in class  
725 at all. Like, I'd, like, play, like, my pencils as cars, like, I would just not  
726 pay attention. My teachers, like, really disliked it because, like, they  
727 would, like, try to, like, call on me to answer questions. Like, just to  
728 make me pay attention in the class. Then, I'd like look at the board, see  
729 what's on the board and, like, give them the answer and then just go  
730 back to playing. Like, I just did not need to pay attention. And then,  
731 once things started becoming more difficult, like, adding, like, variables  
732 to math and, um, like, getting into, like, the structures of equations, um, I  
733 needed to start paying more attention and... 'cause, like, in, like, I  
734 remember, like sixth grade specifically that's when I started learning,  
735 like, oh how to solve for x. And, like, I just could not figure it out for the  
736 life of me. I was, like, I remember, like, crying at the dinner table, like  
737 with my mom, like, trying to help me and not just, like, tell me the  
738 answer. And, um, that was, like, really difficult and I did not want to go  
739 through, like, something like that again. And so, uh, I just sorta, like,  
740 ramped up with, like, I'll start, like, paying attention in class. And, like,  
741 luckily at that point too, like, math started becoming more interesting,  
742 like, English become more interesting. Um, it wasn't just, like, trivial  
743 things at that point. And then, like, especially in high school, like, I  
744 would, like, like, I never took notes in, like, middle school, I don't, like...

745 like, they'd give, like, worksheets and that's pretty much it. Um, high  
746 school I started taking notes. Um, part of my ninth grade year I moved to  
747 Belgium and I went to a Dutch speaking school and I'd speak English,  
748 uh, originally, and so, like, that's where, like, I really kicked into high  
749 gear, um... that's probably, like, the most I don't know robotic time in my  
750 life, where, like, I had to just, like, focus on studying. I couldn't focus on  
751 anything else. Um, I, like, was sorta, like, losing, like, my personality for  
752 the sake of my success. Um, so also, like, school was a lot more difficult  
753 in Belgium. Like, high school was, like, whew! It's, like, you'd take,  
754 like, all three sciences all four years, it's ridiculous. But, um... so, like, I  
755 really kicked into high gear then. And I also did get successful but it also  
756 sucked. But, luckily we moved back to America and, um, like, sort of,  
757 like, kept up with those, like, habits, like, taking notes in class. Like, um,  
758 if I ever, like, missed notes or, like, I don't know... like, sometimes me  
759 and my friends would compare notes for classes that we shared together,  
760 um, stuff like that. And so... those habits they, like, evolved, like, in my,  
761 like, sorta, like... the middle part of my education and, like, I've just  
762 been keeping them through my high school and college now. And  
763 college I'm even ramping it up more. I'm actually, like, having to study,  
764 like, regularly. Um, I foresee in my next semester, like, I'll have to pick  
765 it up 'cause I'm doing 18 credit hours unlike the 15 I'm doing this  
766 semester. So, yeah.

767

768 Interviewer:

769 How did it feel when you first realized that you would need to really  
770 crack down and study?

771

772 Student:

773 Um, it, it was scary. Um, it felt like I had, like, hit my, like, maximum,  
774 like, it's like I just can't learn anymore. I felt, like, wow, like, I'm just  
775 stuck. Like, this is it, like, I'm not gonna get any smarter than this. Like,

776 whew, um... but, like, I did do work and I did learn some things from my  
777 school in Belgium. Um, and, like, it, it was, like, scary but I also sort,  
778 like went into this, like, I had this, like, mode that's, like, robot-y, this,  
779 like, mode of, like, w- I just can't, like, feel emotion right now I just  
780 have to perform. Like, I just have to do what I have to do. I can't, like,  
781 worry about things. And, um, yeah. But that initial reaction was  
782 definitely scary.

783

784 Interviewer:

785 So, did you say your classes were taught in Dutch?

786

787 Student:

788 Yeah.

789

790 Interviewer:

791 D- did you learn to speak Dutch?

792

793 Student:

794 Um, I, I didn't... I could speak it functionally, like, if I went to order  
795 food I could order food. Um, I... in class, like, I could, like, understand  
796 what the teachers were saying for the most part, um, but once we got  
797 into sciences, like, that's where it like, became difficult 'cause it was a  
798 lot of, like, specialized wording for, like, sciences. And, um, and they  
799 weren't teaching even easy stuff. Like, I remember, like, physics we  
800 were learning, like, uh, I say easy, easy for high school. Like, in physics  
801 we were learning, like, refraction of light, um, like, curves bending  
802 going through different materials and, like, biology we're learning, like,  
803 the nitrogen cycle through, like, I don't remember what it's called  
804 exactly. I remember it being, like, pretty difficult and having lots of  
805 specialized wording and that made it, like, extremely difficult. My two  
806 best classes was, like, the English class that I had to take 'cause every

807 student has to take it. And then, um, math 'cause math is just numbers  
808 and once I learned how to count, like, it became pretty easy. There's not  
809 a lot of, like, specialized wording and, like, it was, um, like, the  
810 equivalent of, like, algebra two. So, like, there's nothing, like, too crazy  
811 that I had to learn. Um... but yeah, like, I, I had to learn some Dutch.  
812 Um, and, like, honestly if I had worked harder at, like, learning Dutch, I  
813 probably would've learned more from my school in Belgium. It was just,  
814 uh, like, I don't know. I over estimated my ability to learn a language in,  
815 like, six months. Yeah.

816

817 Interviewer:

818 Yeah, you won't learn a language in six months. So, in general, how  
819 much effort would you say you put into your classes?

820

821 Student:

822 Like, right now?

823

824 Interviewer:

825 Sure.

826

827 Student:

828 Um, I would say as far as, like... I would say I'm probably putting, like,  
829 50% of my effort in classes. Um, 'cause I do a lot of stuff, like, outside  
830 of classes, like, I was on the debate team, I'm doing, uh, Air Force  
831 ROTC, uh, I really like chess and I play chess very often. I like... that's  
832 something that, like, I really want to get good at. Um, I like boxing. Um,  
833 and then I, like, I just, like, like spending, like, some free time, like, to  
834 myself. I don't know, like, just, like, watching Netflix, like, watching TV  
835 shows. I don't have to think about anything. So, like, probably, like, 50%  
836 of my time is to classes, just, like, going into classes, um, like, doing,  
837 like, homework, making sure I have, like, the lecture notes, like,

838 downloaded and stuff like that.

839

840 Interviewer:

841 All right. Do you feel like you put in more or less effort compared to  
842 your peers?

843

844 Student:

845 Um... well, it... I don't know. I think, I think I'm very, like, middle of the  
846 road. Um, I have a room with, like, two, uh, two of my close friends  
847 from high school and one of them, uh, he is really pushing his, like,  
848 workload I guess. He was, like, the valedictorian of my high school out  
849 of, like, a graduating class of 308. Um, so it's not, like, an easy position  
850 to be a valetor- valedictorian. And, um, he's, like, double majoring now  
851 in biomedical engineering and chemical engineering and so he has a lot  
852 to do and he's really pushing himself. So, I definitely work harder, er,  
853 work less hard than he does. But then my other roommate, um, he, uh,  
854 he's a psychology major and, um, he doesn't have to take as many credit  
855 hours as either of us. And, like, I definitely put in more effort into my  
856 classes than he does. Um, so, I see myself as, like, very middle of the  
857 road, like, in the effort that I put in.

858

859 Interviewer:

860 All right. Do you feel like you learn more from classes that you have to  
861 put more effort into?

862

863 Student:

864 Um... yeah, yeah. Um, just sorta, like, following, like, the  
865 macroeconomics, um class. At the beginning of the semester the first  
866 two exams, it was, like, ridiculously easy to, like, finding, like, the  
867 averages and, like, percents of things.

868

869 Interviewer:

870 Yeah.

871

872 Student:

873 It's just, like, basic algebra. Um, so I didn't have to put, like, any effort  
874 into it. Like, I don't really feel, like, I was learning anything. Like, it's  
875 just, like, oh GDP, like, okay, like, I... like, that's just a number that's  
876 given to you. Like, I won't ever have to calculate that in my life. Um, but  
877 then once things started becoming more difficult, like, having, like,  
878 weird, weird equations where it's, like, inflation rate equals, like, the  
879 sum of the basket over, like, whatever over something times whatever,  
880 like, that where it becomes, like, there's a lot of variables here and I don't  
881 quite know what either, like, any of them are. 'Cause there just indexes,  
882 they're not, like, actual units. Like, there's no, like, value to them. It's  
883 just, like, some comparative value. And so, that's where I had to study  
884 more. And, like, now I'm, like, feeling, like, I'm learning, like, I'm  
885 actually learning stuff, like, how to calculate the inflation rate. Like,  
886 that's, like, useful and that's, like, somewhat interesting. And then, like,  
887 as far as, like, between classes, like, macroeconomics whereas it's not as  
888 interesting. Um, I don't have to put in as much effort in, like calc two.  
889 Like, I have to put way more effort in, like... yeah I definitely feel, like,  
890 the more effort I have to put in, like, the more I'm learning. Um... yeah  
891 definitely, like, the more, like... I mean it's just, like, the more time I  
892 spend on something, the more time I, like, work to understand  
893 something, the better I'm gonna understand it. And, like, I'm just gonna  
894 learn more from that.

895

896 Interviewer:

897 All right. Now, think about a subject or a class where you had to put in a  
898 lot of effort to succeed and describe it to me.

899

900 Student:

901 Um, subject or class that I had to put a lot of effort in it to succeed. Well,  
902 uh, calculus one, that's the... like, math, like, came really easy to me.

903 Um, I guess just because, like, I was raised, I was tested on that often.

904 And, like, so through algebra two, like, and pre-calculus, math was just,  
905 like, sort of, like, a breeze. Um, nothing's, like, too particularly difficult.

906 Um, I was getting, like, A's in all my math classes. And then I hit  
907 calculus one and, like, things became, like, a lot more difficult. Like,  
908 learning, like, the limits and stuff like that. Um... sorry what was the  
909 question again?

910

911 Interviewer:

912 Just tell me about a class that you had to put in a lot of effort to succeed.

913

914 Student:

915 Okay, and, like, calculus one, um, I studied for that, like, a little bit. Um,  
916 just, like, prior to exams, like, um... and, like, it was... it was, like, I don't  
917 know. Putting the effort in was, like, at the time, like, oh it hurt. Like, I  
918 remember crying, like, in my bed, like, I can't figure it out. I had t- the  
919 answer, like, my teacher gave us the answer and the problem. We had to  
920 figure out how to get to the answer. It's, like, I don't know how you got  
921 there. This is, like, too, like, skew of things that, like, are never gonna,  
922 like, reach each other. And, um, putting in the effort, like, then, like, it  
923 sucked but putting in the effort now, like, reflecting on the effort I put in  
924 now, like, it's really nice 'cause, like, now I have a pretty strong  
925 understanding of how to take a derivative of, like, almost, like, any sort  
926 of, like, normal function. Um... you get, like, in the moment, like,  
927 putting in effort into a class just... it, it just, like, hurts a little but, like,  
928 when I reflect back on it, like, it was worth it because I, like, en- enjoy  
929 it. It's something that, like, I... like calculus one it's, like, I really enjoy it.  
930 I, like, built a strong foundation for my, like, learning it's a piece of

931 calculus and I can understand my calculus better now because of it.

932

933 Interviewer:

934 Okay. How do you feel about needing to put in so much effort to  
935 succeed?

936

937 Student:

938 Um... this sorta related back to, like, the sorta, like, measurement of my  
939 peers. Like, I feel like if I have to put in more effort to, like, understand  
940 something then, like, my peers, like, that's where I start to worry and  
941 that's where, like, when I worry I can't figure out, like, fix essentially,  
942 like, with, like, the problems with, like, oh... um... 'cause, like, if I have  
943 to put in more effort than my peers, it's scary 'cause it's like I'm, like,  
944 inherently worse than them at this point and I just need to work harder.  
945 And, like, the scary part is that, like, you can only work, like, so hard  
946 until, like, you've, like, maxed out at the maximum amount of the work  
947 that you can actually, like, physically do in a day. And so, like... having  
948 to, like, put more work into something it's scary, um, but as long as like  
949 I'm having to put in the same amount of work as, like, my peers, like,  
950 I'm okay. It's, it's comforting to know that, like, we're all going through  
951 the same, like, struggle. And so, like, if I have to put in more work, like,  
952 the only, like, real sacrifice is, like, to my hobbies.

953

954 Interviewer:

955 How do you feel about it in partic- referenced to this particular class?

956

957 Student:

958 Um... I mean, like, yeah, as I said, in that, like, moment, like, it sucks,  
959 like, but it wasn't, like, a situation where I felt like I had to put in more  
960 work than my peers. It felt like we were all, like, sort of together in this,  
961 like, lack of understanding of calculus one. And, um... it just... I don't



962 know. It, like... yeah, it just sucked, like, in the moment, like, having to,  
963 like, sacrifice playing online with my friends and, um, going out to eat,  
964 stuff like that. But, um, it's, like, it's nice to have that, like, ability now  
965 that I did put in the effort.

966

967 Interviewer:

968 Okay. What did you get out of that experience?

969

970 Student:

971 Um, I mean, like, if I'm, like, breaking it down, like, one of the things I  
972 got was, like... I felt like I succeeded personally. Um, 'cause I graduated  
973 with a B in that class in calculus and so, like, for a high schooler taking  
974 calculus, I thought it was, like, oh that's not bad. And especially because,  
975 like, our... in our school district, like, our calculus teacher was, like,  
976 notorious for being difficult. Um, he taught us, like, into calculus two a  
977 little bit and, um, so, like, I felt pretty good about myself, like,  
978 afterwards. Um, so it's, like, I'm where I need to be, like, for what I need  
979 to know. And then, like, it also, like... like, it ignited, it... calc one is  
980 what ignited, like, my love for math. Like, it, like... math was, like, easy  
981 and I was apathetic to it but now it's, like, difficult but... interesting  
982 because, like, there's, like, so many, like, cool things you can do with it  
983 now, with, like, knowing calculus. And, um, it, like, inspired, like, my  
984 interests essentially.

985

986 Interviewer:

987 Okay. Now, think about a subject or a class where you were able to  
988 succeed without my effort at all and t- tell me about that.

989

990 Student:

991 Um, so, t- the- my... I did English 12 in my senior year and that class  
992 was a joke. Um, like, we read, like, Frankenstein, which isn't a very long

993 book, but we read it over the course of two months. Um, like, our final  
994 project was, like, an essay that we had to... like, an autobiography that  
995 we had to write, like a memoir. Um, but we had, like, again, like, a  
996 month and a half to do it. Um, that class was really easy. Like, I didn't  
997 have to put effort into it. And, like, I even remember, like, there was,  
998 like, situations where it's, like, me and my friends, like, we were so, like,  
999 put together and giving him such, like, an understanding that, like, the  
1000 teacher came up to us and, like, asked us, like, on one of the quizzes she  
1001 gave out she was like, "everybody's putting this answer and you guys  
1002 put this answer so, like, but that's not the right answer so, like, why is  
1003 everybody putting this answer?" So, she was, like, asking us for, like,  
1004 what should the right answer on the quiz be? And, um, yeah, that class  
1005 was, like, particularly easy.

1006

1007 Interviewer:

1008 Okay. So, what did you... how did you feel about that experience?

1009

1010 Student:

1011 Um, I don't know. That's sorta, like, my apathy really grew. Like, I just  
1012 did not want to, like... I just didn't even want to show up to class at  
1013 sometimes because it's, like, we're not gonna do anything in this class,  
1014 like, I really could just miss this and spend more time on my hobbies.  
1015 Um... yeah just, like, purely apathetic to it. Like, I just did not want to be  
1016 there.

1017

1018 Interviewer:

1019 What did you get out of that experience?

1020

1021 Student:

1022 Um, I mean... it gave me a sense of, like... a little sense of pride that it's,  
1023 like, wow, like, English at least on the senior level, like, is not that hard.

1024 Like, I'm definitely where I need to be for this. Um, and then, like, not  
1025 much else. Like, the teacher was cool. She just, like, wasn't, like, that  
1026 particularly good of a teacher. Um, yeah. I didn't really get much else  
1027 out of it.

1028

1029 Interviewer:

1030 Okay. Now, think about a student you know who puts in a lot of effort to  
1031 succeed. They do succeed but every time you see them they're working  
1032 their butt off. What does that tell you about how smart they are?

1033

1034 Student:

1035 Um, I mean I think that, like, I think, like, something that, like, they're,  
1036 like, particularly smart. Um, I mentioned my roommate, [Friend 1], the  
1037 one with, like, the double major but somebody that, like, I saw always  
1038 working and, like, really succeeding was, like, a friend back high school,  
1039 [Friend 2]. And, um, she, like, just like, she was, like, a work horse.  
1040 Like, she could, like, study and study and study, like, all day long and  
1041 she succeeded. She got, like, five on all of her AP exams and she did a  
1042 lot of AP exams. Um, it made me feel like, wow, like, this is, like, a  
1043 smart, like, respectable person. Like, they know what they need to do  
1044 and, like, they're doing it. Like, they're pushing themselves, like, to  
1045 succeed. You know, I thought pretty highly of them.

1046

1047 Interviewer:

1048 Okay. Now, think about a student you know who doesn't have to put a  
1049 lot of effort into succeeding. They just kinda fly by. What does it tell  
1050 you about how smart they are?

1051

1052 Student:

1053 Um, I mean, I have a friend, [Friend 3]. He goes to like... we went to  
1054 high school together and he went to [university] here. And, like, he's

1055 probably one of the most, like, talented people I know. Um, and, like, to  
1056 that, like, I think that, like, his talent covers for, like, his smarts. Like, he  
1057 just, like, he, like, uh, like, he did AP Bio with [Friend 2] and [Friend 2]  
1058 would always, like, rant to us, like, he would, like, review the, uh,  
1059 essays, like, the day of the test and, like, still get hundreds on it. And,  
1060 like, she was so fed up with him because, like, he just did not need to  
1061 try. Um, so, like, I still, like, respect him as, like, smart and, like, he's,  
1062 like, somebody that I want to have, like, a intelligent conversation with  
1063 but, um, I don't have that same outstanding respect that, like, I do for  
1064 [Friend 2]. Whereas, she's, like, going and getting it.

1065

1066 Interviewer:

1067 Okay. Now, tell me about a specific time when you received feedback  
1068 that you were not performing to expectations?

1069

1070 Student:

1071 Um, I mean, like, just recently, um... like, I guess it's not, like... I don't  
1072 know, it's a weird example. Like, I would, like, redo physical training in  
1073 Air Force ROTC and, um, my flight commander, like, next up in the  
1074 chain of command he pulled me to the side at one point and during  
1075 physical training and was like, Oscar, your hair is so out of regulation  
1076 that, like, we might not let you participate in lab on Thursday. And, um,  
1077 that sort of sucked. It was, like, oh, I thought I was fine. I got a haircut  
1078 since. Um, so I'm in regulation now but he was, like, all right I need to  
1079 pick things up and, like, that day I went and got a haircut. It was, like, I  
1080 need to just fix this and it was convenient to fix it then. But, it sort of  
1081 sucked to be, like, oh, I messed up here. Um, another time, like... I don't  
1082 know, I guess that sort of, like, represents, like, a lot of what I feel like  
1083 when I say, like, I don't succeed to the expectations, like, oh that sucks.  
1084 Um, 'cause, like, my father especially, like, he held, like, high  
1085 expectations for me. He always, like, he used expectations as a way... as

1086 a motivator which did not resonate well with myself. And so, um, like, a  
1087 lot of, like, the expectations that, like, are set on by others that, like,  
1088 aren't, like, expectations I set on myself, like, I don't give a lot of credit  
1089 to, like, because of, like, my past with my father.

1090

1091 Interviewer:

1092 Okay. So, you responded by cutting your hair in that particular instance.

1093 Did you do anything else in response to that?

1094

1095 Student:

1096 Um, no. I mean, like, the only, like, sort of change in behavior was that,  
1097 like, the next physical training session was the next time after I would  
1098 see my, uh, flight commander, I was just, like, looking out to see, like, is  
1099 he gonna pull me aside and say, like, your haircut's not enough. 'Cause,  
1100 like, the regulations are worded so weirdly, um, and I did not want to cut  
1101 it. Like, I want it be just to regulation 'cause, like, the semester's almost  
1102 over. Um, and so, like, I was just looking out to, like, is he gonna notice  
1103 my haircut? Is he gonna say anything on it? Like, maybe, like, a pat on  
1104 the back? Or like another chastising? Like, what's gonna happen here?  
1105 Um, I never, like, approached him and asked him am I good. I was just,  
1106 like, waiting to see his response. And he didn't say anything so I guess  
1107 I'm good. Um, but other than that, like, yeah those are the only two  
1108 things that I went and got my hair cut and looked out for his response.

1109

1110 Interviewer:

1111 Okay. What about in general the... that thing with your dad and other's  
1112 expectations? How do you usually respond to that?

1113

1114 Student:

1115 Um, well, like, if other people, like, just like what do you mean, like  
1116 how do I respond to, like, respond to other people setting expectations

1117 on me?

1118

1119 Interviewer:

1120 Mm-hmm (affirmative).

1121

1122 Student:

1123 Um, like, one I'll, like, consider is this a fair expectation? Like, is this

1124 where I'm supposed to be? Um, so a lot of the time the expectations of,

1125 like, my professors, like, I'll care about that 'cause it's, like, a fair.

1126 They're out here trying to teach me this material, like, I should be

1127 learning the material. Like, that's a fair expectation, that I'm learning it

1128 to some degree. Um, but, like, if it's an unfair expectation or something

1129 that's, like, I just really don't need this this. It's just adding, like, extra

1130 stress, then, um, not necessarily don't need but not something that I

1131 haven't put upon myself. Like, I didn't need to get a haircut but, like, I

1132 put that extra stress on myself. So, like, by enrolling in the program so

1133 it's, like, I have to... that coincides with my expectation of myself. Um,

1134 and it's, like, oh let's see how it coincides with my expectation of myself.

1135 And if it doesn't, like, that's when I'll consider is it reasonable and then,

1136 like, I'll take it up and, like, put it on myself now. And if it's not

1137 reasonable, then all right. Then, like, sure whatever. Like, if it's... if the

1138 impacts of it are, like, severe I'll, like, adhere to it but, like, if there's no

1139 real impact to it, like, you can expect all you want but, you're not gonna

1140 get it.

1141

1142 Interviewer:

1143 Okay. What sort of things did your dad expect of you that caused you to

1144 feel kind of I guess rebellious?

1145

1146 Student:

1147 Um, well, like, one was grades. Like... like- like, okay, like, I'm, like,

1148 opening up now. Like, I never felt, like, my father was ever proud of me  
1149 'cause, like, I feel I guess I've seen, I present, like, my success to him  
1150 and he'd say why isn't it better? And so, like, I'd be like, all right psh.  
1151 Like, grades was, like, specifically, I'd get a 100% and, like, isn't it...  
1152 why isn't it 102%? And, like, that was, like, every time without fail, like,  
1153 the dude's, like, I mean he is like a robot. Like, you input something and  
1154 he'll output, like, something every time. Um, and another time was, like,  
1155 he was my soccer coach, like, as well when I was growing up. And I've  
1156 played a lot of soccer, like, I ended up going to club soccer and being  
1157 competitive with it. And, um, like, he, like, I don't know he'd, like, yell  
1158 at me across the field, like, do this, do that, be here, be there. it's, like,  
1159 I'm not... like, let me just play my soccer, like, I just, like, let me do my  
1160 thing. Like, once I'm out on the field, like, everything we didn't practice  
1161 should be showing not, like, you yelling should be showing now. Um,  
1162 and so, like, yeah, just in, like, those scenarios, um... like, those are, like,  
1163 the only reason, like, I assumed, like, from early in my life is because I  
1164 started to, like, push away, like, not, like, even, like, listen to his  
1165 expectations. I think he sort of noticed that and he relaxed his  
1166 expectations on me as I went into high school. But, um, I think he  
1167 started to notice that I was like, I'm not telling him my grades. Like, he  
1168 has to go online and, like, look them up on, like, their school database  
1169 because I don't know I guess he figured out his expectations.

1170

1171 Interviewer:

1172 Okay. What has been the outcome of your reactions to, uh, any sort of  
1173 feedback that you weren't performing to expectation?

1174

1175 Student:

1176 Um, the outcome-

1177

1178 Interviewer:

1179 Mm-hmm (affirmative).

1180

1181 Student:

1182 ... to the feedback? Um, I mean, I can be, like, sort of, like, branched off  
1183 into two trees. One is, like, if it's, like, a reasonable expectation that,  
1184 like, I guess in that situation I didn't know, like, what's put upon me by  
1185 this other person. Like, I feel bad about myself. I'll just be like, alright  
1186 yeah that's fair. I, like... I sorta suck in this, like, regard. Um, in this,  
1187 like, measure. And, like, I'd, like, figure out, like, what I need to do, like,  
1188 and, like, just, like, by myself, like, fix it. Um, and if it wasn't, like, a  
1189 fair expectation that's, like, that you can, like, go eat your expectation, I  
1190 couldn't care less. Like, buh bye (laughs).

1191

1192 Interviewer:

1193 Okay.

1194

1195 Student:

1196 Yeah.

1197

1198 Interviewer:

1199 What's the outcome... the typical outcome that comes with those two  
1200 reactions?

1201

1202 Student:

1203 The typical outcomes of those two reactions? The one is, like, me, like,  
1204 if it's, like, uh, school thing it's, like, me just cracking down harder and,  
1205 like, working on myself to, like, fix, like, so I can meet that expectation  
1206 in the future. And if it's one that, like, um, that, like, I don't see as  
1207 reasonable then, like, I'll just (sigh) generally just, like, end with me not  
1208 wanting to, like, hang out with, like, that person or not, like, talk to that  
1209 person anymore. Um, I don't like people trying to, like, box me in with



1210 expectations and, like, if you're, like, putting expectations that I deem  
1211 unreasonable on myself it's, like, one, like, why are you doing this? And  
1212 two it's, like, that's unreasonable. Like, I just don't, like, I don't see why I  
1213 have to do this. And, um, yeah. So, it's generally just me, like, pushing  
1214 that person away.

1215

1216 Interviewer:

1217 Okay. Do you feel like you learn anything from experiences like those?

1218

1219 Student:

1220 Experiences like, uh...

1221

1222 Interviewer:

1223 Both the haircut type situation and the, uh, no I'm not gonna do what  
1224 you say situations.

1225

1226 Student:

1227 Um... yeah. Like, with the, like, sorta, like, ones that, like, I deem as  
1228 reasonable, um, I learn that's, like... I learn... sort of, like, a new  
1229 perspective on, like, the measure of myself. Like, and, like, just, like, at  
1230 the end of the day, the expectation has some measure that I either meet  
1231 or don't and that's how I meet the expectation or don't. And, like, seeing  
1232 how, like, somebody else is, like, measuring just, like, any aspect of  
1233 myself, like, that's a new perspective that I didn't necessarily consider.  
1234 Um, and if it's reasonable it's useful to some degree and it's, like, you  
1235 can start expecting myself, like, going forward and not, like, that person,  
1236 like, inevitably would be out of my life at some point. Like, I can  
1237 continue on with that expectation and just, like, make myself a better  
1238 person. And that if it's something that's, like, unreasonable, like... shh,  
1239 um, I don't really know. Like, can you restate the question again? Sorry.

1240

1241 Interviewer:

1242 Have you learned anything from those experiences?

1243

1244 Student:

1245 Um, not really. Like, the... it's really, like, those experiences, like,

1246 generally just make me more emotional and, like, resentment. Like, it's

1247 just, like, why are you, like, putting these unreasonable expectations on

1248 me? Um, I get, like, defensive and, um... I don't know. Like, the only

1249 thing I really learn is that, like, there's people judging me. Like, it's

1250 sorta, like, people are, like, unfairly judging me when they put

1251 unreasonable expectations.

1252

1253 Interviewer:

1254 Okay. What advice would you give to someone who's struggling with

1255 either of those situations? The reasonable and unreasonable

1256 expectations?

1257

1258 Student:

1259 Um, well I think that before you can start classifying things into, like,

1260 reasonable or unreasonable, you have to, like, really figure out, like,

1261 what is good for yourself. You have to, like, figure yourself out, like,

1262 perfectly almost. Um, because, like, the danger of that is, like, deeming

1263 expectations as reasonable or unreasonable it's, like, well if something is

1264 actually reasonable and you're just, like, diluted and you think it's

1265 unreasonable, like, you're just doing detriment to yourself. So, one it's,

1266 like, you have to just find yourself. Um, like, I actually have a friend,

1267 like, my friend that's being the psychology major, like, he's having

1268 issues with expectations on him. Not necessarily expectations but, like,

1269 personal stuff and, like, my advice to him was just, like, you just gotta

1270 really start thinking about yourself, like, what's good for you? What is it

1271 that you need and what is it that you need to be successful? And, like,

1272 how of you measure your success and stuff like that. Like, you really  
1273 just need to have, like, a good grasp on, like, your sense of self. Um and  
1274 then, like... I don't think is, like, the engineering side, define, like,  
1275 problems well. Like, define problems with, like, if this expectation  
1276 causes problems and doesn't, like, promote any... doesn't promote any  
1277 reasonable change to, like, fix those problems, like, then it's probably an  
1278 unreasonable expectation. Um, if it does promote, like, reasonable  
1279 change that is, like, good for you, that you, like, figured out, like, oh this  
1280 is, like, something that I should do, like, you can solve those problems  
1281 and benefit yourself. And so, like, those two things, like, understand  
1282 yourself and, like, define your problems well.

1283

1284 Interviewer:

1285 Okay. So, do you care if your peers judge you when you do poorly?

1286

1287 Student:

1288 Oh yeah, yeah. Like, um, I, like, I care if they, like, disrespect the ability  
1289 that I do have because of my failures. Um, 'cause I feel like it's easy.  
1290 Like, one of my calc two class mates, like... like, sees that they did, like,  
1291 50% better than me on an exam then, like, it's gonna be pretty easy to  
1292 be, like, oh that person's dumb. But, like, it's also, like, a lost of  
1293 perspective on the situation because were in calculus two, like, were  
1294 above, like... this is, like, a higher echelon of education. Um... and so,  
1295 like, being, like, being judged on something that's, like, difficult can  
1296 really easily discredit, like, what credit I do have and, um, that's, like,  
1297 scary. Like, I do not want to be put in that situation, you know?

1298

1299 Interviewer:

1300 So, why do you care if they judge you?

1301

1302 Student:

1303 Um, I mean at the end of the day, like, we live in a... in a world where  
1304 I'm gonna have to rely on other people and, like, these people may, like,  
1305 be, like, my future employers. They may be, like, people that I, like, rely  
1306 on. Like, a valuable useful relationships. And, um, like, if they think less  
1307 of me, if they think I'm worse than them, like, they're going to... they're  
1308 not going to be inclined to value our relationship, like the relationship  
1309 that we have and, um, that's scary. Like, having a lack of a valuable  
1310 relationships, like, is, like, detrimental in my eyes.

1311

1312 Interviewer:

1313 Okay. Do you care if your professors judge you when you do poorly?

1314

1315 Student:

1316 Um... no. Unless they don't do anything to, like, fix the poor  
1317 performance. Like, I guess professors, like, they're sorta, like, in a  
1318 unique position to, um, judge and then fix. Like, they can value this  
1319 person's doing poorly. Like, they weigh the judgment of what is poor  
1320 and what is good. And they say, like, you're poor. And they have the  
1321 unique ability to fix it because they have, like, the knowledge on  
1322 education. They know how to teach. Um, but if they don't take that extra  
1323 step to, like, teach then, yes, now you're just being a jerk. Like, help me  
1324 here. I'm obviously struggling and, um, yeah.

1325

1326 Interviewer:

1327 Okay. So, uh, in general, why don't you care if your professors judge  
1328 you when you do poorly?

1329

1330 Student:

1331 Um, again, it's just that, like, unique position, like, 'cause they can fix  
1332 that, like, poor performance. Like, they have the knowledge and the  
1333 know how to be like, "all right, you're doing poorly." And, like, at least

1334 them judging me is, like... it's not necessarily the best way of, like,  
1335 identifying a problem but it's a way of identifying the problem. At the  
1336 end of the day, like, if, like, I can show improvement, they'll appreciate  
1337 that. They'll appreciate, like, I actually breathed in what they were, like,  
1338 putting out. Like, I took in the knowledge and by improving on my poor  
1339 performance, like, they... it essentially makes me special in their eyes  
1340 'cause it's, like, I was doing bad it's, like, oh they're doing bad but now  
1341 they're doing good. Actually, I do have a good example of this. One of  
1342 my friends in Air Force, uh, Arles, he, um, like, we have to do push ups  
1343 and sit ups and running on our personal fitness assessments. And, um,  
1344 we do one every month. And in the first month, Arles didn't even hit the  
1345 minimum we have to do for sit ups. Um, which is, like, 38 in minute.  
1346 And, uh, it Sargent [name], one of the, uh, caudry officers at the  
1347 detachment. He, um... not officers, uh, enlisted... he sort of, like, joked  
1348 around with Arles a little bit and, like, gave him some grief about it. But  
1349 then, like, we had a fitness assessment just yesterday and Arles passed  
1350 the sit up portion with, like, flying colors. He got, like, 53 or something  
1351 and the max is 60. And, um, like I saw Sargent [name], like, reach up,  
1352 like, pick him up, give him a hand and, like, pat him on the back. And  
1353 so, like, Sargent [name] did judge him, like, at the beginning but once he  
1354 saw that he improved, like, he appreciated it, like, more particularly than  
1355 me doing, like, three better... like, improving by three sit ups.

1356

1357 Interviewer:

1358 Okay. Do you think you learn more from an experience that's  
1359 challenging or not challenging?

1360

1361 Student:

1362 Um, I learn more from an experience that's challenging. It's sort of  
1363 relating back to, like, the calculus one and the English 12 scenario. Like,  
1364 English 12, like, I just did not, like, learn anything from that class. Like,

1365 it was just, it was purely apathetic. Whereas, calc one, like, it was  
1366 challenging but, like, I actually learned. And I think, like... I think, like,  
1367 to learn, the more information that's, like, being put out in a class, like,  
1368 that's just going to, like, promote more challenge because, like, there's,  
1369 like... you have to work harder to, like, carry it all almost if we imagine  
1370 it like that. And so, if, like, if you can fulfill that challenge or you can go  
1371 to that challenge, like, you will definitely learn more.

1372

1373 Interviewer:

1374 Okay. Does it matter to you if you succeed during a challenging  
1375 experience that you have learned a lot from?

1376

1377 Student:

1378 Um, it matters less. But, like, in a challenging experience, like, my  
1379 measure of success is, like, did I learn, like, from this? Um, so they, like,  
1380 sorta, like, coincide with each other on, like, a personal level. But, like,  
1381 if I'm, like, just purely learning, like, and success is, like, some other  
1382 variable, like, yeah learning would be more valuable to me.

1383

1384 Interviewer:

1385 Okay. And I thought we'd talked through all these different ideas related  
1386 to motivation and effort and challenges. How would you summarize  
1387 what you've shared with me?

1388

1389 Student:

1390 Um, I mean, I would summarize it as, like... like, in life, like, in school,  
1391 which is, like, a major part of, like, life right now, for, like, college  
1392 students, um, like's gonna be challenging. Um, I guess there's gonna be  
1393 challenging parts and easy parts. And, like, the easy parts are gonna be,  
1394 like, really easy to just blow through and just, like, get out of the way  
1395 but once you, like, get to, like, the challenging parts, like, that's where,

1396 like, interests and passion is, like, going to be inspired. Um, that's where,  
1397 like, you actually learn and you better, like, what you want to, like,  
1398 better essentially. Um, and, like, it's... t- the only way, like, to, like,  
1399 promote challenge is through setting expectations on yourself and like...  
1400 considering and sometimes adhering to expectations of others because,  
1401 like, those expectations are a measure of, like... generally with  
1402 challenges, like, the expectation's that you succeed the challenge. That's  
1403 like a measure of did you succeed the challenge? And, like, if you don't  
1404 measure it, like, there's no way to know, like, did I actually succeed the  
1405 challenge here? And so, like, adhering to, like, your own personal  
1406 expectations are a good way to... like, breathe in everything from the  
1407 challenges.

1408

1409 Interviewer:

1410 Okay. Did you get any... gain any insights from our discussion?

1411

1412 Student:

1413 Um, yeah. Yeah, definitely. Like, um... like, I was just thinking about,  
1414 like, more like on questions like what advice would I give?

1415

1416 Interviewer:

1417 Mm-hmm (affirmative).

1418

1419 Student:

1420 Like, along with the advice, like, it only works if, like, you have a very  
1421 similar mindset, like, as I do. Um, it's just, like, that sorta, like, problem  
1422 first mindset. and, like, I remember, like, telling my friend Andreas  
1423 who's the psychology major this advice and, like, even, like, [Friend 1]  
1424 my friend he's a double major, like he followed the same advice that we  
1425 both just, like, have to find ourselves. But, like, I don't think that  
1426 resonating well with him and so, like, just, like, considering... different

1427 perspectives is something that, like, I should probably work on more.  
1428 Um, and even that, like, plays in with the... like, expectations, like, I  
1429 should, like, consider the, like, what I consider the, uh, unfair  
1430 expectations more, like, with more scrutiny. I feel like, am I actually  
1431 being, like... am I being reasonable here with the viewing this  
1432 unreasonable.  
1433  
1434 Interviewer:  
1435 Okay. Anything else you would like to share with me?  
1436  
1437 Student:  
1438 Um, nope. I think that covers all of it.  
1439  
1440 Interviewer:  
1441 All right. Thank you.



1     **Interview Transcript 16: Peter**

2     Interviewer: Allison Adams

3     Date Interview conducted: 11/30/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Our goal today is for us to have a detailed discussion about your beliefs  
8     about or your perceptions of the nature of your intelligence, and the  
9     discussion will inform my understanding of the perceptions of  
10    engineering students and will help future decisions about the  
11    undergraduate engineering experience and how it can be improved for  
12    all students.

13

14    Student:

15    Yep.

16

17    Interviewer:

18    I want to hear your own thoughts and perceptions. I am expecting that  
19    they will be different from the thoughts of others. There is no right or  
20    wrong answer. I aim to understand your perspective, so I will ask  
21    questions like “What do you mean by that?”, “Can you elaborate?”  
22    These types of questions can end up being a bit awkward and may  
23    require you to really reflect on what you have experienced. So I will  
24    purposefully leave long pauses after my questions. Take your time. If  
25    you need clarification, let me know.

26

27    Student:

28    Okay.

29

30    Interviewer:

31    Any questions?

32

33 Student:

34 Nope.

35

36 Interviewer:

37 All right. So, tell me about yourself as a student.

38

39 Student:

40 Um, well I started going to [university] uh, around three years ago. Uh, I  
41 started as a uh, simple mechanical engineering student and then I took  
42 uh, the Intro to Nuclear Engineering class with Dr. [name] and he uh,  
43 went on to write some marvelous equations on the board and that got me  
44 into like, uh thinking about going into the nuclear option. So, and um, I  
45 did that and I actually like, learned a lot about uh, like not the only...  
46 only the mechanical aspect of like how a nuclear reactor worked but  
47 like, also like... like the diffusion of neutrons within a core and like, we  
48 go all into like, all of that interesting stuff and um, it's been a good  
49 experience, I feel like, yeah.

50

51 Interviewer:

52 Okay.

53

54 Student:

55 Yeah.

56

57 Interviewer:

58 You mentioned a simple, I mean student...

59

60 Student:

61 Yeah.

62

63 Interviewer:  
64 Uh, does that just mean you went to the nuclear option or is there  
65 something more to that?  
66  
67 Student:  
68 Like, this out, maybe it was a like, a misuse of words, like I would... I  
69 would say standard, like mechanical engineering students.  
70  
71 Interviewer:  
72 Okay.  
73  
74 Student:  
75 Because there are not too many people that go into the nuclear option  
76 here at [university]. Yeah.  
77  
78 Interviewer:  
79 Okay.  
80  
81 Student:  
82 Yeah.  
83  
84 Interviewer:  
85 So, you mention marvelous equations. What... what made you feel that  
86 they were so marvelous?  
87  
88 Student:  
89 Um, the way like, they actually relate everything, like. So, as... as like a  
90 student who is like, by then a... what was I? Like I think a freshman in  
91 second year... second semester. Uh, he went on like, deriving um,  
92 Einstein's most like, known equations  $E=mc^2$  on the board from like, a  
93 single like, equation and he introduced like, constants and he explained

94 like, wh... what things are coming from, and I... I remember being from  
95 like, in the first weeks of my class. So like, people who are interested in  
96 such stuff would like, get the attention of the professors definitely, yeah.  
97 So, yeah. That's what happened.

98  
99 Interviewer:

100 Okay.

101  
102 Student:

103 Yeah.

104  
105 Interviewer:

106 Do you... do you like getting the attention of the professors like that?

107  
108 Student:

109 Yeah, yeah, yeah.

110  
111 Interviewer:

112 Okay. If you could describe your student self with adjectives, what  
113 adjectives would you give me?

114  
115 Student:

116 Quiet. Um, more of a team worker/player than a leader, I guess. Um,  
117 generally a nice person, I guess (laughs).

118  
119 Interviewer:

120 Okay. What does it mean to you to be a quiet student?

121  
122 Student:

123 Um, I usually don't like to share my thoughts like, with colleagues. Uh,  
124 but uh, being here at [university] as a mechanical engineering student,

125 you kind of... you have to. You kind of have to because there are so  
126 many like, group activities and um, stuff that you actually um, work on  
127 as a group and may... may... may never actually evolve without actually  
128 having to work with people. Yeah.

129

130 Interviewer:

131 Okay. So, you mentioned that you don't necessarily like to have to...  
132 started like to...

133

134 Student:

135 Yeah, but I kind of have to.

136

137 Interviewer:

138 Have you started liking it here or just...

139

140 Student:

141 Yeah, yeah.

142

143 Interviewer:

144 Like do it. Okay.

145

146 Student:

147 Yeah, I kind of learned to do it. Usually with like, uh so one of the  
148 things that actually made me like, change as a person from being like,  
149 very quiet and not liking to share ideas into like, more of a uh, person  
150 that's like, like to actually talk about and discuss topics with students and  
151 professors and whatnot uh, is one of the classes that I took with Dr.  
152 [name]. Like, he actually had like, uh, sessions that are very uh, uh I  
153 would say dense when it comes to like, the presentation. So, he would  
154 actually stop you during presentations and ask you tough questions.  
155 There was like, the other year uh, junior year. So, that from... from that

156 point like, it kind of broke the kind of fear that I would have, like  
157 sharing information and like, outcomes with people. Uh, just after I did  
158 that class um, I feel like any other presentations or like, public speaking  
159 about scientific topics would be much, much... much easier and the fear  
160 factor would actually be broken. Yeah.

161

162 Interviewer:

163 Okay.

164

165 Student:

166 Yeah.

167

168 Interviewer:

169 Cool.

170

171 Student:

172 So, th... th... that was basically one of the actually experiences that ha...  
173 have changed like, the way I think about uh, assignments or like, talking  
174 about topics, scientific topics or like, um, school related like, um,  
175 knowledge, I guess. Yeah.

176

177 Interviewer:

178 How would you say you feel about those now?

179

180 Student:

181 Uh, I'm glad I had them. Like, yeah. They actually changed me as a  
182 person like, I wouldn't like to uh, actually uh, because I fear to make  
183 mistakes but then when I actually made the mistake in the class and the  
184 professor corrected me, it was actually like, nothing. It was like,  
185 something that you actually have to... it's kind of an obstacle that got  
186 broken, then you actually get used to it and then the fear element or the

187 actual presenting information is just not there, it's just yeah.

188

189 Interviewer:

190 Okay. So, so would you say he just kind of didn't mind when you made

191 mistakes, just went "Oh not quite, I guess I need to go over this a bit

192 better."

193

194 Student:

195 Yeah. Yeah, yeah. He would actually stop you have you like, he would

196 actually like, one of the uh, things that I remember him doing he would

197 stop you like, if... if you actually misconveyed one piece of information

198 he would actually ask you to maybe take a step backward in the actual

199 like, process and ask a question, a simple question about that and like,

200 you would actually figure out that you may have made a mistake

201 presenting the piece of information. That he would actually let you

202 figure it out during your presentations. So, I found that I really did like

203 learning experience for students, especially when... when every single

204 person in the class is a student but like, some PhD students and the

205 professor himself. I think that's a really cool like, learning experience.

206

207 Interviewer:

208 Okay, so are telling me you've kind of learned to take mistakes not as

209 failure but as an exper...

210

211 Student:

212 Yeah.

213

214 Interviewer:

215 Uh, sort of opportunity.

216

217 Student:

218 Yeah, yeah, definitely.  
219  
220 Interviewer:  
221 Okay.  
222  
223 Student:  
224 Yeah.  
225  
226 Interviewer:  
227 How about what does it mean to you to be a motivated worker?  
228  
229 Student:  
230 To be a motivated worker?  
231  
232 Interviewer:  
233 Mm-hmm (affirmative).  
234  
235 Student:  
236 Okay. Well. So, I think that in order for you to succeed in anything that  
237 you are doing in your life, not matter if it was like, work related or  
238 school related or like, social life related, you have to be actual... you  
239 have to set a goal and then desire your goal. So, I feel like desire is  
240 basically the main element that you can actually build anything, any...  
241 any concept of success off, basically. That's... That's what I think. Yeah.  
242  
243 Interviewer:  
244 Okay.  
245  
246 Student:  
247 Yeah.  
248



249 Interviewer:  
250 What does it mean to you for a student to be a leader?  
251  
252 Student:  
253 Um, I honestly do not know (laughs).  
254  
255 Interviewer:  
256 (laughs).  
257  
258 Student:  
259 I have no leader skills personally, like I don't think that I have them.  
260 May... maybe I haven't like, figured out that element of myself. I don't  
261 know. But I personally don't think that I have the like, background to be  
262 a leader at all. Like, I am a good team player. I would... I can cover up  
263 for like, a lot of things but like, to be actually the person who gives like,  
264 orders and whatnot, I just like, cannot find that in me, honestly. Yeah.  
265  
266 Interviewer:  
267 Okay (laughs).  
268  
269 Student:  
270 (laughs).  
271  
272 Interviewer:  
273 What does it mean to you to be a nice person?  
274  
275 Student:  
276 Um, to be a nice person is just like, not too... when actually interacting  
277 with people, you actually have to think about the... the perception about  
278 what you are going to say. First, um, like, uh, try not to uh, emotionally  
279 hurt them or like, that's like, wh... whenever I talk to anyone like, this is

280 like, something th... that's very in my background. Yeah.  
281  
282 Interviewer:  
283 So you're just trying to be considerate?  
284  
285 Student:  
286 Yeah, yeah.  
287  
288 Interviewer:  
289 Okay.  
290  
291 Student:  
292 Yeah.  
293  
294 Interviewer:  
295 Let's say hypothetically now. You're in a class, and you get your exams  
296 back...  
297  
298 Student:  
299 Mm-hmm (affirmative).  
300  
301 Interviewer:  
302 And you feel like you've succeeded on this exam...  
303  
304 Student:  
305 Mm-hmm (affirmative).  
306  
307 Interviewer:  
308 Ah, how do you react and why?  
309  
310 Student:

311 I feel happy, like...  
312  
313 Interviewer:  
314 Okay.  
315  
316 Student:  
317 I usually feel happy and um, I think if... if I like, have good relationship  
318 with like, the class... classmates, I'll like, discuss like, see like, uh, like,  
319 try and like, talk to them and see how did... they did like, try and see  
320 like, I don't know, like if I have like, a friend that is sitting next to me  
321 also like, like this, like all the hard work paid off, and yeah. And... he...  
322 he... because he was like, working with me and I'm pretty sure he liked  
323 me. He did well as well. Yeah.  
324  
325 Interviewer:  
326 Okay.  
327  
328 Student:  
329 Yeah.  
330  
331 Interviewer:  
332 Why is that your reaction?  
333  
334 Student:  
335 I... I... why is it my reaction to be happy?  
336  
337 Interviewer:  
338 Mm-hmm (affirmative).  
339  
340 Student:  
341 Because like, my hard work paid off. Like, I... I really like it when...

342 when that happens. Yeah.

343

344 Interviewer:

345 Okay.

346

347 Student:

348 Yeah.

349

350 Interviewer:

351 So, you mentioned that you might share it with a friend. Who would and

352 who wouldn't you share your test score with?

353

354 Student:

355 Yeah. I mean, not... not... not just simple classmates, they have to be my

356 friends like, we actually would go study together or like, spend time. Uh,

357 I don't like to share grades with like, uh, just people who sit next to me.

358

359 Interviewer:

360 Okay.

361

362 Student:

363 That's weird. I feel like it's weird, honestly.

364

365 Interviewer:

366 Okay.

367

368 Student:

369 So, so something that's... if it was done to me, would be acceptable. You

370 see what I mean?

371

372 Interviewer:

373     Okay.

374

375     Student:

376     Like if someone like, random just came to me and showed me his like,  
377     exam like, like, um, yeah. (Laughs).

378

379     Interviewer:

380     Would it... would it make a difference if, instead of just showing you  
381     their exam they came and asked something like, “Hey, did you do good  
382     on this?”?

383

384     Student:

385     Yeah, I mean, yeah, if he's... yeah. Sure. Yeah. I think I accept that as a  
386     question like, maybe the guy wants to like, talk and see what's up, I  
387     guess. Yeah.

388

389     Interviewer:

390     Yeah, maybe he's asking for help or something.

391

392     Student:

393     Yeah, yeah. Sure. Maybe... maybe... he.... he didn't do very well and he  
394     was just like, he's thinking like, to study together, maybe he's looking for  
395     like, build friendship. I don't know, like, sure, like.

396

397     Interviewer:

398     Okay.

399

400     Student:

401     Yeah, it's a good question. Like to...

402

403     Interviewer:

404 So, it kind of depends on the approach?  
405  
406 Student:  
407 Yeah, yeah. More... more than... more than you know, more on the  
408 approach. Yeah.  
409  
410 Interviewer:  
411 So, what do you consider to be a success on an exam?  
412  
413 Student:  
414 Mm, that's relative, honestly, because being like, an engineer, uh, like  
415 here at [university], I've had like, days where I have multiple exams on  
416 the same day or like, different projects or some like, outside  
417 commitments that I have to actually work on and uh, the grade on the  
418 exam's relative to the amount of work that I have got like, to study and  
419 prepare for the exam. That's like, the way I think about it, honestly.  
420 Sometimes, sometimes I am very happy if I get a B, sometimes I'm not  
421 if I don't get like 95. Yeah, yeah.  
422  
423 Interviewer:  
424 So, you're saying that you might just be kind of more forgiving if life  
425 exploded.  
426  
427 Student:  
428 Yeah.  
429  
430 Interviewer:  
431 (laughs)  
432  
433 Student:  
434 Yeah, yeah, definitely. Uh, I think that's like, that's applicable only to

435 exams, it's applicable to any other aspect to life. Yeah.

436

437 Interviewer:

438 Sure. So, would a grade curve um, affect your perception of a success on  
439 an exam.

440

441 Student:

442 Mm, yeah. Actually yes, yeah. Yeah, I feel... I feel like, mm a curve  
443 would... so the curve to me is like, a way for the university or for the  
444 professor not to fail everyone in the class. Like, he wants to shift the  
445 average of... of the class so it's a pass/passing grade. For me, if I actually  
446 were below the average, before the curve, that's like, I actually have, like  
447 failed like, this is a failure. Uh, no matter the curve actually pushes me  
448 in, makes me like, pass the class. That's like, it's not um. Um but at the  
449 same time if you think about it, some professors actually like, give like,  
450 very difficult exams so I honestly don't know how to answer that  
451 question (laughs). So, it's somewhere in the middle between these two  
452 like, limits I think. So, some people would actually be happy after they...  
453 they'll go like, go open the grade after a curve and other people think  
454 about like, the actual original like, grade that they got.

455

456 Interviewer:

457 And which one are you?

458

459 Student:

460 I prefer to get... so if I have to say something about this, I prefer to get a  
461 good grade right off the paper not with the curve. Yeah.

462

463 Interviewer:

464 All right.

465

466 Student:  
467 Yeah.  
468  
469 Interviewer:  
470 So, what if on that test you did better than someone in the class that you  
471 consider to be smarter than you are?  
472  
473 Student:  
474 I did better than them?  
475  
476 Interviewer:  
477 Mm-hmm (affirmative)  
478  
479 Student:  
480 How... I mean... I usually don't know that piece of information.  
481  
482 Interviewer:  
483 Okay.  
484  
485 Student:  
486 What someone like, actually thinking about it. Yeah.  
487  
488 Interviewer:  
489 What if they were one of your friends, and you just thought they were  
490 off the chart smart?  
491  
492 Student:  
493 Uh, I mean, does it actually make any difference (laughs). Yeah.  
494  
495 Interviewer:  
496 That's what I'm asking you.



497  
498 Student:  
499 Yeah.  
500  
501 Interviewer:  
502 Does it?  
503  
504 Student:  
505 No, it does not actually like, I mean... I mean, like he might... he might  
506 have had his actual like, other compliances with life. So, he actually may  
507 have not been as um, as good a performer, especially on tests, you know.  
508 Like, tests are like, different processes. They evaluate like, knowledge  
509 retained. So, it's like, uh, doesn't mean anything like (laughs). What does  
510 it actually mean to have like, yeah.  
511  
512 Interviewer:  
513 Okay.  
514  
515 Student:  
516 Ye... uh... esp... especially like, yeah. So, all tests. Especially like, I  
517 might have like, missed so many pieces of information that I didn't just  
518 take but the test came out to be like, basically only what I have studied.  
519 The other guy might have studied the whole like...  
520  
521 Interviewer:  
522 Other stuff.  
523  
524 Student:  
525 Yeah, other stuff. Everything else and me actually might have like, got a  
526 lower grade. So what, does it actually matter? No, it doesn't.  
527

528 Interviewer:  
529 All right.  
530  
531 Student:  
532 Yeah.  
533  
534 Interviewer:  
535 So, if you actually felt like you haven't succeeded on a test...  
536  
537 Student:  
538 Mm-hmm (affirmative)  
539  
540 Interviewer:  
541 Uh, how would you react and why?  
542  
543 Student:  
544 Um, well the first reaction would be upset. I would be upset. Uh,  
545 because I usually do good in tests, like. If something happened that's...  
546 that made me like... so as I was saying like, if there was like, a lot, uh,  
547 like. So, if I, uh, if I was like, working on something else and that made  
548 me not study for the test and then the outcomes a lot like, very bad then I  
549 wouldn't be actually very upset but then back... back if I actually spent  
550 so much time on the test studying and preparing, then the outcome was  
551 not what I expected, I would be sad. Uh, I usually, what I do on the... so,  
552 usually there are more than one test on uh, any... on almost all classes  
553 I've had, I usually score better on the next one... I uh, uh I would like, at  
554 least from the first test learn how the teacher like... instead of actually  
555 asking questions, that's a key element. That... that actually does not only  
556 to be like, how the teacher thinks. That also tells you like, what are the  
557 main concepts that we have learned in this class. What do you actually  
558 need to actually retain, and that... If you are a good student, you can

559 actually predict that whatever on the exam, to what's the lecturer  
560 actually said in the lecture. So, you can actually build on that so you can  
561 have like, a more uh, profound way of like, gaining knowledge from a  
562 teacher or... or... or, like obs... observing the knowledge from the  
563 teacher. Yeah.

564

565 Interviewer:

566 Okay.

567

568 Student:

569 Yeah, yeah.

570

571 Interviewer:

572 So, what if like, maybe the professor put a grade distribution that was  
573 just anonymized or something?

574

575 Student:

576 What do you mean?

577

578 Interviewer:

579 Like, uh sometimes I'll see...

580

581 Student:

582 Can I... can I pause for a second?

583

584 Interviewer:

585 Sure.

586

587 Student:

588 I need to get water.

589

590 Interviewer:

591 So, what I meant is, sometimes after a test I'll see a professor, they'll put  
592 up a grade distribution like, maybe a box and whisker plot. Tell you  
593 where the class average was, who... not necessarily who but what the  
594 highest and lowest scores were etcetera. Um, so if they put up one of  
595 those and you found out that the other students in the class had all done  
596 quite a bit better than you did, how would you react?

597

598 Student:

599 Um, so the first thing that... if this happens to me it's gonna like, the  
600 most piece of info... important piece of information that this conveys to  
601 me that, I'm sorry. I'm like, missing what the teacher actually wants from  
602 the class. Like, there is maybe... maybe I'm focusing on other elements  
603 that maybe students... other students get but I do not like. So, I would  
604 like, try and see how may I improve like, or maybe see like, what other  
605 students think about the class. Yeah. Mm... mm... there is something  
606 wrong. Like, if I see that... because usually, I usually get like... I don't  
607 usually like, score grades below average but, I... for me, this is my like,  
608 way of knowing if there is anything going wrong with the process of  
609 learning the subject. Yeah. So yeah.

610

611 Interviewer:

612 Okay. So, wh... what if someone that you didn't consider to be very  
613 smart did better than you?

614

615 Student:

616 Mm, what does it mean for someone to be more smarter than me?  
617 (laughs) I feel like, being smart is like, uh, is like, people have like weird  
618 understanding for this because as long as like, you have... obviously  
619 everyone has like, some intelligence along with like, their desire to learn  
620 some... some topic. That doesn't mean anything for you to be smart of

621 not like, if you actually combine these two elements you actually  
622 succeed. That's... that's what I feel like. So, coming back to the question  
623 like, I don't... I don't actually look at people that way (laughs).

624

625 Interviewer:

626 Okay.

627

628 Student:

629 Yeah.

630

631 Interviewer:

632 So, you just kind of think it's irrelevant?

633

634 Student:

635 Yeah, yeah, yeah.

636

637 Interviewer:

638 All right. So, what do you share anyone else that you didn't do well on  
639 that test?

640

641 Student:

642 W... would I what?

643

644 Interviewer:

645 Would do you share with anyone else that you didn't do well?

646

647 Student:

648 Yeah, yeah. I've done... yeah.

649

650 Interviewer:

651 Yeah.

652

653 Student:

654 My friends like, my close friends, my classmates, yeah.

655

656 Interviewer:

657 And why, why do you not mind sharing with them?

658

659 Student:

660 Uh, maybe they actually know, as I said like, maybe I was looking at the

661 class from a different angle than the other students are looking at the

662 class like. They might actually help me. Yeah.

663

664 Interviewer:

665 Okay. Does it matter to you if your peers think you're smart?

666

667 Student:

668 If...if my parents?

669

670 Interviewer:

671 Peers.

672

673 Student:

674 Oh, peers.

675

676 Interviewer:

677 Like, classmates and stuff.

678

679 Student:

680 Yeah, yeah. Mm, no I don't think it matters. Um, so like, yeah, yeah. I've

681 been working with people in Senior Design now. Um, we actually don't

682 care like, I see it as a... in the group spirit like, if you actually put on the

683 work and do the agenda and whatnot, it's more of an ethical thing than  
684 being smart or not. Like, again (laughs) what is it to be smart? Yeah.

685

686 Interviewer:

687 Okay. So, does it matter to you if your professors think you're smart?

688

689 Student:

690 I think the professor like, cares if you actually get it or not like, get what  
691 they are... want to convey or not, more than... see I cannot continue  
692 without defining what is "smart".

693

694 Interviewer:

695 Okay.

696

697 Student:

698 Yeah, like what is it like, being smart? I said being smart?

699

700 Interviewer:

701 All that matters in this interview is what you think it means.

702

703 Student:

704 Yeah, okay. So, um (laughs). For a student to be smart... see... it's... it's...  
705 it's uh... I mean, I think it's... being smart or not is irrelevant to the  
706 outcome of your work in school. So, uh, your grades reflect your desire  
707 and learning and how much uh, work you've put into learning some  
708 topic. So, that's what I see like, having a good grade on an exam does  
709 not equal you are smart. If you actually uh, are always above average  
710 does... that also does not mean that you are smart. Yeah. Well, I don't  
711 know, it's like, my thought of it. Yeah.

712

713 Interviewer:

714 Okay. So, what does it mean to you if someone has above average  
715 grades?  
716  
717 Student:  
718 Hm, hard worker...  
719  
720 Interviewer:  
721 Okay.  
722  
723 Student:  
724 Like, someone who actually has the desire to achieve.  
725  
726 Interviewer:  
727 Okay, and then what does it mean to you for someone to actually just  
728 plain be smart?  
729  
730 Student:  
731 Mm, it doesn't actually have to be related to school at all.  
732  
733 Interviewer:  
734 Okay.  
735  
736 Student:  
737 Like, it can be... so if someone was smart, they might know how to deal  
738 with like, daily issues or...  
739  
740 Interviewer:  
741 So, for example street smarts.  
742  
743 Student:  
744 Yeah, yeah. Social people, people who are like... I've seen like, people



745 like, who have nothing achieved in school and have like, no degrees but  
746 they have accomplished some extreme things in life. So, smart does not  
747 equal education at all to me, yeah.

748

749 Interviewer:

750 Sure.

751

752 Student:

753 Yeah.

754

755 Interviewer:

756 Okay. What motivates you to keep pursuing engineering degree.

757

758 Student:

759 Um, love of actually making things happen. So, yeah, like, gathering  
760 knowledge and having an idea and designing like, the process of how  
761 something's gonna work and having to actually see it grow in front of  
762 your eyes. That is just like, something marvelous like (laughs), making  
763 actual things happen, yeah. So, that's what I like about engineering,  
764 yeah.

765

766 Interviewer:

767 Okay. So, why does that motivate you to get an engineering degree?

768

769 Student:

770 Why does it motivate me? Because I like it. I like to actually see like,  
771 building stuff and having like, um, not... not... not only necessarily like  
772 building physical objects but like, building thought processes and  
773 researching information, putting together different technologies so you  
774 can actually achieve a given goal or, you know.

775

776 Interviewer:  
777 If you were to make a pie chart of your motivations as a student and you  
778 were dividing it between your learning of material and the grades you  
779 get, what percent would you say you are motivated by each?  
780  
781 Student:  
782 So, grades. What are the elements of the pie chart?  
783  
784 Interviewer:  
785 Your desire to learn versus your desire to get a good grade.  
786  
787 Student:  
788 Mm, I would say um, 70 desire and 30 um, grades. So... because grades  
789 are important. Yeah, definitely.  
790  
791 Interviewer:  
792 Okay, why do you think that's the distribution that you end up with?  
793  
794 Student:  
795 Because at the end of like, if you come actually to the reason why you  
796 are actually doing this, you know, you want to retain the knowledge.  
797 You actually need to actually have the actual information in your  
798 background like, the background of your brain so you can actually build  
799 upon it. So it's important to observe the information. So, the desire is  
800 actually important if... it's... it's more important than anything else.  
801  
802 Interviewer:  
803 Okay. Would that stay the same for all of your classes?  
804  
805 Student:  
806 Would it stay the same?

807  
808 Interviewer:  
809 Yeah, the distribution?  
810  
811 Student:  
812 Uh, no, no.  
813  
814 Interviewer:  
815 Okay.  
816  
817 Student:  
818 Generally not.  
819  
820 Interviewer:  
821 What kind of things might change it? And how?  
822  
823 Student:  
824 Uh, classes that I um... some classes... people, I think, they are not very  
825 interesting to me honestly, but like, it's something that I have to do.  
826  
827 Interviewer:  
828 Okay.  
829  
830 Student:  
831 Yeah.  
832  
833 Interviewer:  
834 So, if you weren't interested in the class then grades would be a little  
835 more important than usual?  
836  
837 Student:

838 Yeah, definitely.

839

840 Interviewer:

841 Okay. In... in a class that you're not interested, what do you think the  
842 new distribution would be?

843

844 Student:

845 That's a good question because I've... I've... now that I'm thinking about  
846 it, I've had classes at the beginning... at the beginning of the semester I  
847 wouldn't be very interested and then I would have like, one of the  
848 greatest professors teaching the class and I would suddenly it's like, they  
849 often cross like, I need to learn this. So, um, it's actually more or less uh,  
850 I like, I honestly don't know how to actually convey this piece of  
851 information but for me personally, the motivation is the teacher. I  
852 actually can't reflect like, the motivation for the sequence and like, each  
853 like, they are relative to each other. If one increases then the other one  
854 has to increase.

855

856 Interviewer:

857 So they kind of inspire each other.

858

859 Student:

860 Yes, yeah. Yeah.

861

862 Interviewer:

863 Okay.

864

865 Student:

866 Some teachers, I'm not going to say anything, but some teachers don't...  
867 don't have like, they are not as motivated toward teaching undergrads as  
868 they should.

869  
870 Interviewer:  
871 Yeah.  
872  
873 Student:  
874 Yeah.  
875  
876 Interviewer:  
877 That seems to be a fairly common phenomenon unfortunately. But how  
878 important would your grades versus your learning be in a class that  
879 you're not very interested in?  
880  
881 Student:  
882 Um, wha... what's the question again?  
883  
884 Interviewer:  
885 Uh, if you're making that pie chart but for a class that you're not  
886 interested in, what's the ratio?  
887  
888 Student:  
889 I would say 50/50.  
890  
891 Interviewer:  
892 Okay.  
893  
894 Student:  
895 Yeah, yeah.  
896  
897 Interviewer:  
898 So, in what ways are your grades important to you?  
899

900 Student:

901 In what...?

902

903 Interviewer:

904 In what ways are your grades important to you?

905

906 Student:

907 Um, I don't understand the question. I'm sorry. Like, like what do you  
908 mean, what ways?

909

910 Interviewer:

911 Uh, like, if I said uh, let's see. My backpack is important to me because  
912 it's how I carry things to and from school and unlike a messenger bag it  
913 doesn't strain my back.

914

915 Student:

916 Okay, okay, okay. Yeah, yeah. I see what you mean. So, yeah, so when I  
917 think of grades like, especially like exam grades uh, I wouldn't say exam  
918 grades... so it depends, it depends like, if you are writing a report, lab  
919 report or experiment that you've done, it's kind of an open ended like,  
920 you actually have... you can input as much information as you could. So,  
921 that actually give a good evaluation to whatever you actually learn  
922 during the process of like, uh, gathering the data, analyzing the data,  
923 writing the report, and then what important piece of information to  
924 incorporate within the report.

925

926 Student:

927 So, it's different than a test being given to you. If you don't know the  
928 answer to this, this and this, then you might get a pass this test or you're  
929 gonna have a lower grade. Uh, so for me, um, my grades or reports are  
930 like, ref... reflective of what the professor thinks I have retained, retained

931 of the knowledge he taught me. So, that's like, my like, my... the way I  
932 think about grades, but on an exam, honestly like, I don't think grades  
933 mean anything. On tests, yeah.

934

935 Interviewer:

936 Okay. So in what grades uh, what, sorry. In what ways are your grades  
937 at the end of the semester important to you?

938

939 Student:

940 Mm, no, no. Not very important to me honestly like, I'm more interested  
941 if like, how can I employ whatever I've learned. Yeah.

942

943 Interviewer:

944 Okay. So in what ways is learning important to you?

945

946 Student:

947 Learning, in general it's like an adventure. Like, you actually need to put  
948 effort in order to achieve a goal. So, like, if I'm like, desire of course,  
949 um, uh. I see myself as a person who likes to learn a lot, and if in like, I  
950 don't know how to do something, I would actually research and see,  
951 look... look at ways to do it. Um, I don't like to like, have people do  
952 things for me. That's me in general, in life. This is how I think about it.  
953 Uh, learning is like mastering some like, uh, level of achieving your  
954 goal. Whatever that goal might be, might be knowing how to evaluate a  
955 surface temperature, or it might be also knowing how to hang your T.V.  
956 on the wall. So, they are both to me, uh-huh, like very similar, like  
957 knowing how to actually do something, it's a great val- I have a great  
958 value for that.

959

960 Interviewer:

961 Okay. So let's say now you're enrolling in classes for next semester...

962

963 Student:

964 Mm-hmm (affirmative).

965

966 Interviewer:

967 And there's a course required for your major that you're working on  
968 enrolling in, and it has two different lecture options, both of them are  
969 times that work for you but are taught by different professors...

970

971 Student:

972 Mm-hmm (affirmative).

973

974 Interviewer:

975 And maybe you know these professors, maybe just know their  
976 reputations but uh, professor A you know that you're going to have a  
977 hard time keeping up a good grade in that class, but you're going to  
978 come out having learned a lot...

979

980 Student:

981 Mm-hmm (affirmative).

982

983 Interviewer:

984 Professor B, you're... you're not gonna have a hard time keeping an A or  
985 whatever in that class but you may come out with a shallower  
986 knowledge than if you had taken professor A's class. Which one would  
987 you enroll in?

988

989 Student:

990 Mm, oh I think I... see... sometimes you don't even... okay. Something  
991 that I have learned from my experience as a student, I think a professor's  
992 reputation or whatever people tell you about professors does not mean



993 anything.  
994  
995 Interviewer:  
996 Okay.  
997  
998 Student:  
999 Yeah.  
1000  
1001 Interviewer:  
1002 What if you had taken from these two professors before and so you...  
1003 you just kind of knew.  
1004  
1005 Student:  
1006 Okay. Um, I would go with the more challenging professor, honestly,  
1007 because what's... what's the goal at the end for you to actually come here  
1008 every day, to actually retain knowledge and then... If you are going to  
1009 take a class that's an easy A and you have minimal amount of work and  
1010 possibilities for you to actually practice what you've learned throughout  
1011 homework, assignments or whatnot, and then the evaluation is like  
1012 trivial and everything is easy like, I could have done that using my  
1013 computer at home, couldn't I? So, I... I would... I would do the more  
1014 difficult professor.  
1015  
1016 Interviewer:  
1017 Okay.  
1018  
1019 Student:  
1020 Or more challenging, I would call it.  
1021  
1022 Interviewer:  
1023 So, can you think of a situation where your answer might change?

1024  
1025 Student:  
1026 Um, yeah.  
1027  
1028 Interviewer:  
1029 You want to elaborate on that?  
1030  
1031 Student:  
1032 Yes, uh, so being... being... a student in the mechanical engineering  
1033 department um, I do not seem to have much time working on an essay  
1034 for human diversity that I have, like for American Ethnics class, so I  
1035 would honestly like, choose an easy professor to teach me a class of that  
1036 kind. So, yeah.  
1037  
1038 Interviewer:  
1039 So, like, a...  
1040  
1041 Student:  
1042 I would... I would rather...  
1043  
1044 Interviewer:  
1045 Gen-ed course.  
1046  
1047 Student:  
1048 Yeah. I would rather like, spend the time writing my reactor theory  
1049 report (laughs). So, yeah.  
1050  
1051 Interviewer:  
1052 Okay. So, tell me about your learning and studying strategies.  
1053  
1054 Student:

1055 What?

1056

1057 Interviewer:

1058 Learning and studying strategies.

1059

1060 Student:

1061 Oh, okay. Sure. So, I... I think of myself as a person who um, gets

1062 most... I would say at least 70% of what I learn from lecture and then

1063 homeworks would make that at least 90, and the reviews or tests, that's

1064 like, the most I can do. Not the most that can be done, but the most I can

1065 do as a person. So, yeah. Uh, I think um, knowing uh, how the professor

1066 actually conveyed the information and he... him speaking from an expert

1067 point of view, explaining a topic to you is like, him given... giving you

1068 like, a summary of what you actually need to investigate further

1069 throughout your homeworks or like, through your reading of the

1070 textbook or whatever like, method he might recommend at the beginning

1071 of the semester, or maybe during the semester itself, or maybe he would

1072 reference you for like, if you had a question he would reference you to a

1073 book. That would be a learning experience outside of the like, uh, norms

1074 of the class... typical classroom, I guess. Yeah.

1075

1076 Interviewer:

1077 Okay. How did you come to use your studying strategies?

1078

1079 Student:

1080 Um, so, how... how do I deploy like...?

1081

1082 Interviewer:

1083 Sure.

1084

1085 Student:

1086 Yeah. Sure, uh, so, I think it's based of experience like, being a freshman  
1087 here I was like... I wasn't as... I didn't have as much of a clear vision of  
1088 how the learning experience uh, actually is approached like, the learning  
1089 process I guess, is actually approached but then I've evolved to actually  
1090 learn how professors actually like, introduce topics and then you  
1091 actually have so many references, and if you actually get out of the  
1092 classroom knowing like, key concepts and key pieces of information,  
1093 that's big enough for you to actually go home and read about it and then  
1094 do your homework and then... It's... It's like, it's something that I've  
1095 developed I think, more than something that you read. Yeah.

1096

1097 Interviewer:

1098 Okay. How have your studying strategies changed over time?

1099

1100 Student:

1101 Um, okay. Let's see. I... I don't think they have changed. Like, since...  
1102 since uh, my, I would say, junior year... uh, yeah, maybe... yeah, since  
1103 my junior year, they have uh... when you actually realize that a... okay...  
1104 So, I think... I... I see what you mean. No, I think I can like, elaborate  
1105 more. So, uh, at any point of this... of any semester like, you might have  
1106 some downs in the like... So, the grade, the feedback from the teacher.  
1107 So, you might have like, bad feedback, I wouldn't call it great feedback,  
1108 on one of the homeworks, you haven't actually successfully achieved the  
1109 expectations on given homework therefore you haven't actually  
1110 practiced a good way of learning the material that you needed to do the  
1111 homework. So, looking at that experience, repeating it throughout  
1112 maybe the first three years, I came about like, a good way, I think it's a  
1113 good way, like of learning. So, it's kind of like, trial and error. I guess.  
1114 Yeah, until you actually find balance in between the method and the  
1115 outcomes.

1116

1117 Interviewer:  
1118 So do you think that junior year's about when you found that balance?  
1119  
1120 Student:  
1121 Yeah, yeah I would say so.  
1122  
1123 Interviewer:  
1124 Okay. How did you find that balance?  
1125  
1126 Student:  
1127 Uh, as I said like, feedback from teachers on like assignments. Yeah.  
1128  
1129 Interviewer:  
1130 And is that also how you knew you had found that balance?  
1131  
1132 Student:  
1133 Uh, yeah I think so. Yeah.  
1134  
1135 Interviewer:  
1136 Okay. In general, how much effort would you say that you put in to your  
1137 classes?  
1138  
1139 Student:  
1140 Mm, that's again like, relative. Uh, we are talking about engineering  
1141 classes, right?  
1142  
1143 Interviewer:  
1144 Any classes.  
1145  
1146 Student:  
1147 Okay. To me it's different, also like, it's again dependent on the desire

1148 that I have, and the... the energy that's brought... brought to the class by  
1149 the professor, and the difficulty of the assignments, that's all like, like  
1150 different. It's kind of uh, I feel like classes are much... cannot be  
1151 approached in the same method, with the same amount of effort. That's  
1152 not logical, like...

1153

1154 Interviewer:

1155 Okay.

1156

1157 Student:

1158 Yeah, to study like, partial differential equations and say, college  
1159 algebra. It's not like, the same difficulty or like, you're not like, put the  
1160 same effort in each or both.

1161

1162 Interviewer:

1163 So, how much effort would you say that put into a class of average  
1164 difficulty?

1165

1166 Student:

1167 Like on a scale out of 10?

1168

1169 Interviewer:

1170 Sure.

1171

1172 Student:

1173 I would put like, average difficulty I would do like 8 or 7.

1174

1175 Interviewer:

1176 Okay.

1177

1178 Student:

1179 Yeah.

1180

1181 Interviewer:

1182 So, why... why do you feel like that's how much effort you put into it?

1183

1184 Student:

1185 At least, so, yeah, that's... that's itself, it's not like a... something that  
1186 like, I would do for the most of them, honestly, because as I said like,  
1187 for me uh, the teacher's feedback is very important. Like, when the  
1188 teacher conveys this and that, this assignment has not been correctly,  
1189 that might actually let me know that I need to put more effort in this  
1190 class or less effort in this class, and vice versa actually.

1191

1192 Interviewer:

1193 Okay. Do you feel like you would...

1194

1195 Student:

1196 Yeah, it's... it's dynamic like, the amount of effort that you put in a class  
1197 is... is dynamic throughout the semester. It actually changes.

1198

1199 Interviewer:

1200 Sure.

1201

1202 Student:

1203 Yeah.

1204

1205 Interviewer:

1206 Do you feel like you learn more from classes you have to put more effort  
1207 into?

1208

1209 Student:

1210 Yes, definitely.  
1211  
1212 Interviewer:  
1213 Why do you think that is?  
1214  
1215 Student:  
1216 The more you practice, the more you actually learn. Like, do you think...  
1217 so, having one piece of information conveyed in the lecture and then  
1218 going home and reading about it, and then going to the hard part of an  
1219 experiment done on the same concept, collecting data, collating the data  
1220 that you collect. You see, it's like a... like, it's like a process. It takes  
1221 time, it takes effort. It's like desire. It's not like, "oh yeah sure" and then  
1222 put it on the test and give him the paper and yeah. It's not like a method  
1223 that you actually, I don't know, it's...(laughs) yeah.  
1224  
1225 Interviewer:  
1226 Okay. Do you feel like you put in more or less effort compared to your  
1227 peers?  
1228  
1229 Student:  
1230 Um, okay, so English is not my first language, okay.  
1231  
1232 Interviewer:  
1233 Okay.  
1234  
1235 Student:  
1236 And even like, words that I have said during this interview may not have  
1237 been the perfect words to describe a given situation.  
1238  
1239 Interviewer:  
1240 It's okay.



1241  
1242 Student:  
1243 Yeah. So, um, I feel like I... I need to actually put uh, more effort than  
1244 the average English speaking student just because of the language  
1245 difficulty. Uh, I'm not saying that I... I don't speak English very well but  
1246 I actually like... being like native speaker is different than like, an  
1247 international student.  
1248  
1249 Interviewer:  
1250 Yeah. Regardless of how good you are at English, it's just not your first  
1251 language.  
1252  
1253 Student:  
1254 Yeah, yeah, yeah, yeah, yeah.  
1255  
1256 Interviewer:  
1257 That makes sense.  
1258  
1259 Student:  
1260 Sure, yeah.  
1261  
1262 Interviewer:  
1263 Uh, so, think now about a class or subject or something that you had to  
1264 put a lot of effort in to succeed. You did succeed but you worked your  
1265 butt of to do it, and describe that to me.  
1266  
1267 Student:  
1268 Yeah. Uh, the most... so, I don't know, I took a class. It's called  
1269 Radiation Measurement and Detection, uh, the class was a lot of work  
1270 like, it's... it's like, it's time consuming like, and it's stressful but  
1271 finishing the class with the grade I did made like... and having like, a

1272 professor like... seeing a professor actually approving what you've done  
1273 like, the projects and whatnot, actually made like, everything worth it.  
1274 Yeah, yeah. Yeah, like the more... the more important the class, the  
1275 better the grade is going to be, the more happier you're going to be. Like,  
1276 it's... and like, basically the more... the more you work on it, it's gonna  
1277 have... definitely, there's like, no question asked. If the knowledge  
1278 retained after the class like... I feel like students, generally, when... when  
1279 working on like, a given project they have to actually look at like,  
1280 lets...an assignment for example, homework or whatever, they should  
1281 look at what is the information conveyed in class, how can it be  
1282 deployed to solve the problem, and then start solving the problem. That  
1283 process itself actually make the professor see that you have retained that  
1284 knowledge from lecture, and you have deployed in the homework. They  
1285 give you a good grade, you learn a simple task and then you actually can  
1286 retain that piece of information. So, that's like... I think that's the healthy  
1287 learning process. Yeah.

1288

1289 Interviewer:

1290 Okay. So how do you feel about taking that class with so much effort  
1291 needed?

1292

1293 Student:

1294 Um, I would describe the class as the most uh, satisfying learning  
1295 experience I've had at [university] because, just because the amount of  
1296 effort that I've put and by...

1297

1298 Interviewer:

1299 Sorry, did you say satisfying?

1300

1301 Student:

1302 Yeah, yeah.

1303  
1304 Interviewer:  
1305 Okay (laughs).  
1306  
1307 Student:  
1308 Yeah, because... because at the end of the class like, I felt like, I've  
1309 learned so much. I've learned more than I've expected to learn.  
1310  
1311 Interviewer:  
1312 Good.  
1313  
1314 Student:  
1315 Yeah, yeah.  
1316  
1317 Interviewer:  
1318 Okay. So, what did you get out of that experience?  
1319  
1320 Student:  
1321 Um, the most trivial thing is confidence, so like, whatever I've learned...  
1322 because I had actually to... at the end of the course I had to come up with  
1323 a project of my own making and then present the outcomes to like,  
1324 students, peers and PhD students coming to the lecture, and the actual  
1325 professor. So, like, that's that most obvious thing. A... Along with the  
1326 like, basic uh, learning like, processes I would say. Um, scheduling and  
1327 time management because we had to do an experiment and a report  
1328 every single week for that class, for the whole... almost the whole  
1329 semester I would say. So it was difficult, but I actually retained so much  
1330 knowledge from the class.  
1331  
1332 Interviewer:  
1333 Given the opportunity would you take a class like that again?

1334  
1335 Student:  
1336 Yes, yeah. If it's on a topic that I like, yeah.  
1337  
1338 Interviewer:  
1339 Okay. Now think about a subject or class that you were able to succeed  
1340 in without a lot of effort at all, and tell me about that.  
1341  
1342 Student:  
1343 Okay, I have... I have to think about.  
1344  
1345 Interviewer:  
1346 It's okay.  
1347  
1348 Student:  
1349 Yeah, I... on my freshman year, so, well that was like, a long time ago.  
1350 When I first came to [university] I, like, I've been... I have not actually  
1351 gone to college for like, a year and a half, so, and I didn't honestly  
1352 have... I thought I didn't have like, a good grasp on mathematics, which  
1353 is like, (laughs) the most important element about engineering. So, on  
1354 my freshman year I was taking... I took two classes. This is like, my  
1355 very first semester at [university], being someone who is like, from  
1356 another continent (laughs). So I took two classes only, it was like doing  
1357 a summer semester. I took uh, public speaking like, which is like an  
1358 introduct... introductory level class and I took college algebra, and like, I  
1359 basically did almost nothing in the class. I didn't learn anything, just  
1360 because I wanted to see how the learning experience like, is in... in like,  
1361 this university and like, college or like, undergraduate level like,  
1362 classroom. So, yeah. It was very trivial like, it was simple. Um, I don't  
1363 remember the learning experience here (laughs).  
1364

1365 Interviewer:  
1366 Okay. How did you feel about taking that class?  
1367  
1368 Student:  
1369 I mean, I didn't have to like, I also didn't have to but like, you know  
1370 when you go to like, a new uh, let's call it swimming pool for the first  
1371 time, you actually want to test the water and see how it feels? (laughs).  
1372 Yeah.  
1373  
1374 Interviewer:  
1375 No, I jump right in. (laughs)  
1376  
1377 Student:  
1378 Yeah, yeah. That... That was my college level experience like, it was  
1379 warm like, it was good. (laughs)  
1380  
1381 Interviewer:  
1382 Okay, so what did you get out of that experience.  
1383  
1384 Student:  
1385 Um, yeah I... I think I'm like... so, yeah the learning experience is very  
1386 different than back home. Um, so back home you actually have to... to  
1387 be... to have like a Ph.D. to teach any class and then students cannot  
1388 actually ask questions. I don't know, I feel... I felt like more comfortable  
1389 asking questions like, in general because I learned that it's okay to ask  
1390 questions in the class.  
1391  
1392 Interviewer:  
1393 You mean here?  
1394  
1395 Student:

1396 Yeah, here. Yeah, so, yeah... which is very different than they way  
1397 classes go back home. Yeah. Which is, I mean, that's one of the things  
1398 that I learned from doing like, college in general.  
1399  
1400 Interviewer:  
1401 Okay. If...  
1402  
1403 Student:  
1404 Like, it kind of helps like, knowing how the learning atmosphere is.  
1405  
1406 Interviewer:  
1407 Sure.  
1408  
1409 Student:  
1410 Yeah, yeah.  
1411  
1412 Interviewer:  
1413 If you went back in time, would you take that class again?  
1414  
1415 Student:  
1416 No (laughs).  
1417  
1418 Interviewer:  
1419 Okay.  
1420  
1421 Student:  
1422 Like, yeah. I had to spend time like, I didn't have to.  
1423  
1424 Interviewer:  
1425 All right. Now think about a student you know who puts in a lot of effort  
1426 to succeed. They do succeed but every time you see them, they're

1427 working their butt off, and tell me about... what does that tell you about  
1428 how smart they are?  
1429  
1430 Student:  
1431 Nothing.  
1432  
1433 Interviewer:  
1434 All right. How about one who succeeds without a lot of effort at all?  
1435  
1436 Student:  
1437 Um, he has like... a person who actually does that, actually like, has his  
1438 ways of doing things. He's not smart but he actually knows he might  
1439 be... he might be able to notice like, what's important and actually works  
1440 on that instead, but a person who... who like, let's say working very hard  
1441 and then achieving, that tells me more that like, that they have the desire  
1442 to achieve a goal and like... and the other... and the other thing, um, they  
1443 might not know how to approach the problem of like, all the... let's call it  
1444 the learning process, I don't know. Um, is it... is it okay to say people...  
1445 some people don't know how to learn? Like, yeah. They would like,  
1446 stress and like work hard, I don't know, but uh, so... A person that's...  
1447 that does like, minimal amount of effort and does succeed in a class, that  
1448 does not necessarily mean that he actually gained the most knowledge in  
1449 the field or the scope of the class. He might be actually no... he might or  
1450 she (laughs)... they actually might be able to notice what's important and  
1451 then reflect on that during like assignments, basically. So, doing... doing  
1452 well in the class does not actually mean anything but the person who  
1453 actually spent more time working on the class, told you like, they either  
1454 are lost and don't know like, what's going on. Like, don't know how to  
1455 actually study for the class, or they actually like the class so much that  
1456 they want to actually spend that much time doing whatever they are  
1457 doing. So, it's kind of, yeah.

1458

1459 Interviewer:

1460 Okay. So, now tell me about a specific time when you received feedback  
1461 that you were not performing to expectation.

1462

1463 Student:

1464 Okay. Let's see. What happened, the first test of my Reactor Theory  
1465 class. So, I was anticipating that I would very well in the class based on  
1466 the uh, performance that I've made on my lab reports because the  
1467 evaluation for the class were like, I think they were exams and reports  
1468 only. So, we had three exams in the class and lab reports. On my lab  
1469 reports I had like, good grades because like, I had the time to actually  
1470 look at the data and analyze every single aspect or not, but then on the  
1471 exam like, they... the givens... the way that like, you would have to  
1472 actually approach the problem differently, so you can actually solve it.  
1473 It's not like, you have this set of data, it was different. So, I didn't so as  
1474 well as I expected uh, on that test. Uh, that didn't affect uh, my  
1475 motivation at all, it was a learning. Uh, I asked my professor for like, a  
1476 review like, of the test and like going over the material and have... like  
1477 learning how to do maybe a different... uh, look at how to... maybe he  
1478 could explain like, how would we approach such a problem differently  
1479 than what we have been doing during class. Um, and yeah that was one  
1480 of the times when I had like, received bad feedback from a test. Yeah.

1481

1482 Interviewer:

1483 Okay, how do you respond to that feedback?

1484

1485 Student:

1486 Mm, I was stressed on this one. Yeah, but that... that also does not mean  
1487 uh, it would have... I mean, people think differently. For me stress is  
1488 like, an important aspect of life. If... if you don't stress, I mean... how, I



1489 mean... If there's no stress on any like, goal that you actually... if there is  
1490 no like, costs of like losing then there is no... of... there is no loss to  
1491 failure then... then... there is no gain or success. Like, if you succeed  
1492 then you're not getting anything if you don't lose. Uh, you see what I  
1493 mean... I'm saying, right? So, stress is important like, it made me stress  
1494 so for me this is the way I actually push myself to perform better. So, I...  
1495 I think I did... I did better, much better on the second test than I... I've  
1496 been doing very good on the reports. So, I think um, well, it's uh, it's  
1497 stressful, but it's... it's healthy. It's like, the way you learn. Yeah.

1498

1499 Interviewer:

1500 Okay.

1501

1502 Student:

1503 Yeah.

1504

1505 Interviewer:

1506 What action did you take?

1507

1508 Student:

1509 Uh, I talked to the professor and like, asked for like, a class session  
1510 where he can actually go over the test and explain the ways that you can  
1511 actually solve the test and uh, after that um, he actually did and  
1512 everything was like, actually I learned... I... I knew like, how the  
1513 professor actually wants us to think about the topics that we learn, and I  
1514 eventually did better on the second test.

1515

1516 Interviewer:

1517 So you asked him to help you learn from your mistakes?

1518

1519 Student:

1520 Yeah, yeah. Definitely.  
1521  
1522 Interviewer:  
1523 Okay.  
1524  
1525 Student:  
1526 Which is, I think, is a healthy practice on every single professor has to  
1527 do like, on a test... after the tests they have... they, like... no one thought  
1528 if the class did well or not. I think it's a good practice to go over the test  
1529 and like, reveal to the students. Even for students who have done like,  
1530 very good in the test.  
1531  
1532 Interviewer:  
1533 Sure. So you said you did better on the second test, right?  
1534  
1535 Student:  
1536 Yeah.  
1537  
1538 Interviewer:  
1539 Were there any other outcomes of your response to that?  
1540  
1541 Student:  
1542 Um, which uh, response?  
1543  
1544 Interviewer:  
1545 Your actions of how to... your actions of how to remedy it.  
1546  
1547 Student:  
1548 For the which? (laughs)  
1549  
1550 Interviewer:

1551 For the situation.  
1552  
1553 Student:  
1554 Uh, well  
1555  
1556 Interviewer:  
1557 Your... Your actions to try and get better at it.  
1558  
1559 Student:  
1560 Yeah, so... so, I think about the second test as like, the outcome (laughs).  
1561  
1562 Interviewer:  
1563 Okay  
1564  
1565 Student:  
1566 Yeah, so it... it like, I worked hard after the first one... after the first test,  
1567 and the second test I did well. That's because I learned better like, the  
1568 way our professor, the specialist on this given topic, wants us to actually  
1569 think. Yeah.  
1570  
1571 Interviewer:  
1572 Okay. Did you learn anything from that experience?  
1573  
1574 Student:  
1575 Yes, yeah. I have to.  
1576  
1577 Interviewer:  
1578 Would you elaborate on that?  
1579  
1580 Student:  
1581 Uh, let me see. So, um, I would say learning is not like... at least class

1582 evaluations, let's call them like, grades and... they are something that  
1583 um, how can I put it? Shouldn't... shouldn't be the students first concern,  
1584 at all, and that's something that the professor told me. Like, it's just... it's  
1585 just points like, I can give you points and I can take them off, but this is  
1586 my feedback to you of like, of... as an evaluation of what I think you  
1587 have retained from the class. So, for me it's like, uh, a way of assisting  
1588 like, uh, evaluating yourself from the professor. That's like, that's what I  
1589 think about it. Yeah.

1590

1591 Interviewer:

1592 Okay.

1593

1594 Student:

1595 Yeah.

1596

1597 Interviewer:

1598 What advice would you give to someone finding themselves in a similar  
1599 situation?

1600

1601 Student:

1602 Mm, learn from like... like... everything happens for a reason.

1603

1604 Interviewer:

1605 Mm-hmm (affirmative).

1606

1607 Student:

1608 Like, there's nothing that happens like, for nothing. If you actually  
1609 performed good on a test that means you have put in the effort and  
1610 gained uh, gained the knowledge like... you were able to retain the  
1611 knowledge that you need at the moment you needed it but we are... if  
1612 you actually did not get the... or do well... didn't do well like, that's...

1613 learn from that. Um, like there has to be something that went wrong, I  
1614 feel. Yeah.

1615

1616 Interviewer:

1617 Okay. Do you care if your peers judge you when you do poorly?

1618

1619 Student:

1620 No, we are all learning here. It's not a competition.

1621

1622 Interviewer:

1623 Okay, what about your professors? Do you care if they judge you when  
1624 you do poorly?

1625

1626 Student:

1627 Uh, I honestly don't care because, why? Like, why would they care?

1628 They should expect some people to do badly on the test and if they don't

1629 know how to deal with it like, they are not like, competent, sorry, but

1630 they should expect like, people to do that because that's like, normal

1631 like, to see people fail in the class. Yeah.

1632

1633 Interviewer:

1634 Okay. Do you think you learn more an experience that is challenging or  
1635 not very challenging?

1636

1637 Student:

1638 Uh, more challenging experiences are more important to me, honestly.

1639 Yeah.

1640

1641 Interviewer:

1642 Okay.

1643

1644 Student:  
1645 Because I... I tend put more work towards like, such uh, experiences  
1646 which make me more uh, able to, I guess, learn and like, um, yeah. So, I  
1647 would choose the more challenging experiences. Yeah.  
1648  
1649 Interviewer:  
1650 Okay. Does it matter to you if you success during that experience?  
1651  
1652 Student:  
1653 Um, what? Why? Okay. So (laughs). Wha... so what does like... what do  
1654 you mean by succeed?  
1655  
1656 Interviewer:  
1657 So...  
1658  
1659 Student:  
1660 I think success is relative to the point that you entered the class.  
1661  
1662 Interviewer:  
1663 Okay. So...  
1664  
1665 Student:  
1666 If... If you entered the class like, having zero knowledge about the topic  
1667 and finish the class with like, I don't know, 80% knowledge, that still  
1668 like, did not meet the professors expectations, to me that's... that's  
1669 success. You have actually gained knowledge.  
1670  
1671 Interviewer:  
1672 Okay.  
1673  
1674 Student:

1675 Doesn't matter.  
1676  
1677 Interviewer:  
1678 So it doesn't really matter if you exactly did the end goal, as long as you  
1679 learned what you needed along the way.  
1680  
1681 Student:  
1682 Yeah, yeah, yeah. Like, if you didn't get it this time, take next semester.  
1683 I bet that you're gonna be better at it. You know.  
1684  
1685 Interviewer:  
1686 Okay. So now that we've talked about all these different ideas related to  
1687 motivation and effort and challenges, how do you summarize what  
1688 you've shared with me?  
1689  
1690 Student:  
1691 Uh, it's not easy to share. What's... wha... what I said here was like...  
1692 maybe this is the first time I've shared this with people that are outside  
1693 of with my like, friends or like  
1694  
1695 Interviewer:  
1696 Your circle.  
1697  
1698 Student:  
1699 Yeah, my circle like, my... my very close classmates and friends. Yeah,  
1700 and it's... it's... it's... this is a... a good thing that the department is doing  
1701 so that they can get feedback from students (laughs). Yeah, I like it,  
1702 yeah.  
1703  
1704 Interviewer:  
1705 Okay, so if you were to summarize what you told me, what would you...

1706 how would you crunch it down?  
1707  
1708 Student:  
1709 I just described to you what I think about my learning experience at  
1710 [university] (laughs).  
1711  
1712 Interviewer:  
1713 Did you gain any insights from our discussion?  
1714  
1715 Student:  
1716 Uh, gained what?  
1717  
1718 Interviewer:  
1719 In... Insights?  
1720  
1721 Student:  
1722 Oh, insights? Um, no I don't think so. Like, I think if anyone will get  
1723 insights, that will be you (laughs).  
1724  
1725 Interviewer:  
1726 That is why I'm here. All right. Anything else you want to share?  
1727  
1728 Student:  
1729 Ah no, thank you.  
1730  
1731 Interviewer:  
1732 All right.



1     **Interview Transcript 17: Quinton**

2     Interviewer: Allison Adams

3     Date Interview conducted: 12/07/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Our goal today is for us to have a detailed discussion about the b... your  
8     beliefs about the perceptions of the nature of your intelligence. The  
9     discussion will inform my understanding of the perceptions of  
10    engineering students and will help future decisions about the  
11    undergraduate engineering experience and how it can be improved for  
12    all students. I want to hear your own thoughts and perceptions. I'm  
13    expecting that they will be different from the thoughts of others. There's  
14    no right or wrong answer. I aim to understand your perspective so I'll  
15    ask questions like what do you mean by that, can you elaborate, et  
16    cetera. These extra questions can end up being a bit awkward and  
17    require you to reflect on what you've experienced so far. So I will try to  
18    give you sufficient time to respond and think about it. Take your time. If  
19    you need clarification, let me know. Any questions?

20

21    Student:

22    Nope. Let's go.

23

24    Interviewer:

25    All right. So tell me about yourself as a student.

26

27    Student:

28    Uh, how far back should I go?

29

30    Interviewer:

31    As far as you want.

32

33 Student:

34 As far as back in high school I got through without any studying at all. I  
35 was in the advanced classes and put in very minimal effort. Uh, I got to  
36 college and learned that I actually had to study and so the, the big  
37 struggle my first couple years in engineering at least, was figuring out  
38 how to study more than struggling with the material itself. I think my  
39 time in the other, the lower level classes, learning how to study has  
40 served me well now that I've gotten this far in school and actually had to  
41 struggle with the material. Um, so I was a poor student to begin with and  
42 I've slowly gotten to be, you know, I think a more dutiful student over  
43 time.

44

45 Interviewer:

46 Okay. So, you mentioned that you were in advanced classes and then  
47 you put in minimal effort and then you had to study also when you got  
48 to college, how common do you think that phenomenon is?

49

50 Student:

51 I think it's very common because I think the um, high school curriculum  
52 has gotten dumbed down and dumbed down and dumbed down, and so  
53 students who kind of, things just click, are bored. And don't have to put  
54 in effort to get results before they go to college.

55

56 Interviewer:

57 Okay, so you said you have gone from, kind of, a poor student to a  
58 dutiful student, what does it mean to you to be a poor student?

59

60 Student:

61 Oh, for me, being a poor student is being, you know, regardless of  
62 whether or not I understand the material, not putting in effort and not,

63 you know, not doing work that is a reflection of what I can do. So that  
64 would be a poor student, not doing all that I was able.

65

66 Interviewer:

67 Okay, and what about a dutiful student? What does a dutiful student  
68 look like to you?

69

70 Student:

71 Does his homework, studies for tests, and may or may not grasp all the  
72 concepts but puts in the effort and tries.

73

74 Interviewer:

75 Okay, so why do you consider yourself now a dutiful student?

76

77 Student:

78 So this semester I was doing, the beginning of the semester, I had a lot  
79 of homework, I would spend 18 hours a weekend doing homework, or  
80 so, and part of it was because I had a lot of homework and part of it is  
81 because a lot of the stuff doesn't come naturally to me and I have to  
82 struggle with it and put a lot of time into my assignments.

83

84 Interviewer:

85 Okay. So, you said that you have been working on learning how to  
86 study...

87

88 Student:

89 Right.

90

91 Interviewer:

92 What do you think you've learned by doing that?

93

94 Student:  
95 What do I think I've learned by learning how to study?  
96  
97 Interviewer:  
98 Mm-hmm (affirmative)  
99  
100 Student:  
101 Learned how to put in, well, it's, learning how to study, I think you get  
102 to learn how you learn... and so, all the practice that I've put in learning  
103 how to study has allowed me to figure out, you know, what I need to do  
104 for myself to understand the concepts that I'm struggling with. Does that  
105 answer your question?  
106  
107 Interviewer:  
108 I think so.  
109  
110 Student:  
111 Almost... okay.  
112  
113 Interviewer:  
114 Okay, so, let's say hypothetically, now you're in a class and you get your  
115 exams back, you feel, after looking at your exam, you feel you  
116 succeeded on it, how do you react and why?  
117  
118 Student:  
119 If I feel like I succeeded on my test then I continue with the same  
120 preparation that I did before, generally, so it's a sign that I'm putting in,  
121 you know, an optimal amount of effort. Not too much so that I get  
122 burned out but not too little that I don't perform well on the test.  
123  
124 Interviewer:

125     Okay, do you, uh, have any sort of immediate reaction?

126

127     Student:

128     My immediate reaction, I suppose, if I get a bad grade, you know, it's a  
129     little bit of a downer. But it's more like "All right, I have to step it up  
130     and work harder for the next one." If I get a good grade, it's like "Good  
131     well done, good job, me."

132

133     Interviewer:

134     Okay, what do you consider to be a success on an exam?

135

136     Student:

137     So, really, I think a success on an exam is one that I walk into and feel  
138     like I know what I'm doing on the exam. If I walk into a test and, doesn't  
139     happen so much anymore, now that I'm not taking straight up Math  
140     classes, but if I walk into an exam, and I had one exam like this in  
141     Fluids, and there's this one problem where I don't even know where to  
142     begin then that, for me, is not succeeding at a test.

143

144     Interviewer:

145     Okay.

146

147     Student:

148     Whereas, like my Machine Design test, I walk in and I know how to do  
149     all the problems then I feel like I prepared myself well enough for those  
150     tests.

151

152     Interviewer:

153     Okay, so it's less dependent on your grade so much as having some idea  
154     where you're going with all the problems...

155

156 Student:  
157 Right.  
158  
159 Interviewer:  
160 Okay.  
161  
162 Student:  
163 Grade is a factor but you know, it's secondary to learning how to do the  
164 stuff.  
165  
166 Interviewer:  
167 Okay. How are you react if you did better on that exam than someone  
168 you considered to be smarter than you are?  
169  
170 Student:  
171 (laughs) I'd very happy, because you can't help but compare yourself to  
172 other students and you know, there's, some of my friends it'd come  
173 easier to them and they tend to do a lot better than me in exams and on  
174 homework and everything and so if I, if they come ask me, you know,  
175 "how do you do this?" And I can explain it to them, then I feel really  
176 good. Or if I do better on a test than them then I feel really good.  
177  
178 Interviewer:  
179 Okay, would you share with someone else that you did better than that  
180 smart person?  
181  
182 Student:  
183 It depends on the situation, um, in my friend group, everyone's pretty  
184 friendly and it's all good spirit competition, "yeah, I beat this person", "I  
185 got a better score than this person", and it's all friendly, we're all  
186 working together and so it's uh, a good thing. But if, you know, that

187 person is "Man, I did really bad, I feel kind of dumb." And I thought  
188 they felt that way, I wouldn't probably bring it up.  
189  
190 Interviewer:  
191 Mm-hmm (affirmative)  
192  
193 Interviewer:  
194 It would just be if someone else brings it up, you answer sort of?  
195  
196 Student:  
197 Yeah, like, yeah, I did this well, you know. But if someone's feeling  
198 down about their score, I wouldn't try to...  
199  
200 Interviewer:  
201 Spotlight it?  
202  
203 Student:  
204 Yeah, exactly.  
205  
206 Interviewer:  
207 Okay, would you share just your general, how well you did with anyone  
208 else?  
209  
210 Student:  
211 Oh yeah, like, I don't really care, um, you know, if I get 60 or 70 on a  
212 test, well I did this poorly, yeah I'll step it up next time but not, not  
213 particularly embarrassed about. It's just, it's a fact, it's how I did. Yeah  
214 I'll do better next time sometimes.  
215  
216 Interviewer:  
217 Okay, so why are you not uncomfortable with sharing with your friend

218 group?

219

220 Student:

221 I think part of it is that I'm confident in myself, I don't necessarily take  
222 the greatest reflection of how smart I am or how well I'm able to do  
223 things, it's a test of how well I did on that test and I think it's important  
224 for myself to recognize when I'm not grasping something and when I'm  
225 not putting the effort into something that I need to put into it. And so, it's  
226 kind of, kind of helps me improve myself. I don't think there's much  
227 benefit in hiding that, you know. Like, I'm comfortable with sharing that  
228 stuff with the people around me because they're, they're nice people.  
229 They're not going to say "Hey, you're dumb." They'll help me out if I ask  
230 them.

231

232 Interviewer:

233 Okay.

234

235 Student:

236 I have a good group of people around me so that's, that's why I'm  
237 comfortable sharing it.

238

239 Interviewer:

240 Okay, are there people you wouldn't want to share your grades with?

241

242 Student:

243 I don't tend to keep company with people who I wouldn't want to share  
244 my grades with so, there's no one like that that I interact with regularly.

245

246 Interviewer:

247 Okay, so it would just be randos or whatever.

248



249 Student:  
250 Right.  
251  
252 Interviewer:  
253 Okay.  
254  
255 Student:  
256 Even randos usually, I probably wouldn't have a problem with it, I don't  
257 know for sure that I'd have done it but I probably wouldn't mind.  
258  
259 Interviewer:  
260 Okay. So, what if, hypothetically, you got a test back and you didn't feel  
261 like you really succeeded on it?  
262  
263 Student:  
264 If I got a test back and feel like I didn't succeed on it, like, it's a, it's a  
265 kick in the butt to say "Well, do better next time." I think, so it's a little  
266 bit discouraging but at the same time it's, well now I got to work a little  
267 bit harder or change the way I study maybe.  
268  
269 Interviewer:  
270 Okay, so it just kind of raises the bar a little?  
271  
272 Student:  
273 Exactly.  
274  
275 Interviewer:  
276 All right.  
277  
278 Student:  
279 And it happens a lot that um, my first test in the class will be poor and

280 it'll get better and better as the class goes on and I figure what I have to  
281 do to...

282

283 Interviewer:

284 Yeah, as you get used to that class.

285

286 Student:

287 Exactly.

288

289 Interviewer:

290 Okay, what if the other students in the class did much better than you?

291 Like, if the teacher put up a distribution curve or something?

292

293 Student:

294 You can't but compare yourself to how everyone else did... but, you  
295 know, if I'm falling far behind everyone else then that means, you know,  
296 either they're all doing really well, it's a possibility and I'm doing as I  
297 normally do. Or, there's just some piece of the puzzle that I'm missing  
298 and I got to figure out what that is so, I guess, like I said, it's a little  
299 discouraging but at the same time, it's just "All right, now I got to figure  
300 out what you can do to succeed."

301

302 Interviewer:

303 What sort of steps might you take to try to fix that?

304

305 Student:

306 To better on the next test or to do better in the class in general... Might  
307 go talk to the teacher and say "Hey, I did very poorly on this, what can I  
308 do to improve?" Or I'll do my homework a little bit more studiously. Oh  
309 one thing I did recently, I was struggling a lot in Fluids so I started doing  
310 my homework, I would write out my homework as if I was trying to

311 teach it to myself. So I'd list all my steps very clearly so I'd be able to  
312 follow it again if I looked at it. So, when I did, I guess this is an actual  
313 example from what I did do when I got a poor test grade is I changed the  
314 way I did my homework, and I wrote my homework out to myself.

315

316 Interviewer:

317 Okay.

318

319 Student:

320 You know, something you would see in a solution book or something  
321 except more detailed.

322

323 Interviewer:

324 Yeah, so, did that produce the result you wanted?

325

326 Student:

327 It did.

328

329 Interviewer:

330 Excellent, so, what if hypothetically you didn't do as well as someone  
331 that you didn't consider to be as smart as you are?

332

333 Student:

334 If I didn't do as well as someone I think was not as smart as me, I'd,  
335 same thing, you know, it's a sign that I didn't do as well as I could have  
336 or I'm missing a piece of the puzzle and I got to take steps to figure out  
337 what I'm doing wrong and how I can understand the material better. And  
338 there's some classes I just, that just don't click with me for some reason.  
339 Maybe it's the way it's taught, maybe it's the way the background  
340 information that I bring with myself but there's some classes where it's  
341 just (silence) it's difficult for me, so like Programming doesn't come

342 naturally to me so [programming for engineers course] was a struggle.

343

344 Interviewer:

345 Well, no, me neither.

346

347 Student:

348 Yeah. So I worked really hard in that class and I got an okay grade and I

349 learned a lot but it's also, I felt that I learned more in classes I get poorer

350 grades in...

351

352 Interviewer:

353 Mm-hmm (affirmative)

354

355 Student:

356 Because I had to struggle a lot more. Classes I get an A in, I usually

357 didn't put that much effort into it, and it just, it wasn't hard for me for

358 some reason. And so I didn't, and as a result of that, I don't work as hard

359 and I don't learn as much, I think.

360

361 Interviewer:

362 Okay, would you share your score if you did poorly, with your friends as

363 you would with a good score?

364

365 Student:

366 Oh yeah.

367

368 Interviewer:

369 What about, would you share with someone else that less smart person

370 that did better than you did?

371

372 Student:

373 Yeah, because you know, good for them. You know, if someone usually  
374 gets a 60 and then they got a 70 or 80 on a test, then “good for you,  
375 man.”

376

377 Interviewer:

378 Okay, so pat on the back.

379

380 Student:

381 Yeah, exactly.

382

383 Interviewer:

384 Okay. Does it matter to you if your professors think you're smart?

385

386 Student:

387 Does it matter to me if my professors think I'm smart? I've never really  
388 thought about that, uh, I guess... (silence) I don't know. Never thought  
389 about it. I guess it depends on the level of respect I have for that  
390 professor.

391

392 Interviewer:

393 Okay.

394

395 Student:

396 If it's a professor that I like and that, um, that I admire then I'd want  
397 them to think highly of me. If it's a professor I don't particularly like, I  
398 don't like the way they teach or I feel like they're not teaching well then I  
399 probably don't care so it depends on my feelings for that professor.

400

401 Interviewer:

402 Okay, so what about your peers, do you care if they think you're smart?

403

404 Student:  
405 (silence) I think, I think so. It's always nice when people think you're  
406 smart. It's not nice when people think you're not smart. I don't know how  
407 much that has to do with school but... yes.  
408  
409 Interviewer:  
410 Why do you like to be seen as smart?  
411  
412 Student:  
413 Just, you know, it's a nice thing to be seen as.  
414  
415 Interviewer:  
416 Okay.  
417  
418 Student:  
419 I don't really know, it's um, it's nice to be seen as smart because I don't  
420 know, maybe, maybe it's because then you can help people when people  
421 come to you for help. The flip side of that is, if people think you're  
422 really, really smart and say "Hey, I had this complex problem, how do I  
423 fix it?" I don't know. At that point, what do you do? Do you say "hey, I  
424 don't know" or do you put up a false face and say "well, you do, this and  
425 this and this." Even though you don't really know. I don't...  
426  
427 Interviewer:  
428 I guess... my usual thing is I'll go "I can try. Yeah, no idea, sorry."  
429 (Laughs)  
430  
431 Student:  
432 I've been thought of as smart by people in the past and sometimes they'll  
433 ask me a question and I just don't know the answer, I'll say "I don't  
434 know." I don't think there's anything wrong with showing ignorance

435 because we don't always know the same things as other people.

436

437 Interviewer:

438 Mm-hmm (affirmative) Okay, so why does it matter to you if an

439 esteemed professor that you like thinks you're smart?

440

441 Student:

442 Well because the people you admire, it matters to you what they think

443 because you want them to approve of you, right? And so, I guess, it

444 matters because that person's opinion matters to you. Like, if there's a

445 teacher I admire, I want them to think highly of me because I like them.

446 I guess, I'm not entirely certain why.

447

448 Interviewer:

449 Okay. That's all right.

450

451 Student:

452 You want the approval of the people you admire...

453

454 Interviewer:

455 Mm-hmm (affirmative)

456

457 Student:

458 You decide to get it.

459

460 Interviewer:

461 I think most people do, so tell me about, what motivates you to keep

462 pursuing an Engineering degree?

463

464 Student:

465 Um, student debt, if I don't get a job then I won't be able to pay back my

466 student debt.

467

468 Interviewer:

469 (laughs)

470

471 Student:

472 But more than that, I came into Engineering, I wanted to make a little bit  
473 of a place, and I still want to take what I learned here and go out into the  
474 world more, someplace. The main criteria I have for a job after  
475 graduation is I want to be able to go to work and come home at the end  
476 of the day and say "I did something good." And a lot of the things I learn  
477 in Engineering, I may not apply at wherever I work but the mindset and,  
478 you know, having been exposed to the material may help in the future.  
479 So, I want to get that piece of paper that says I'm qualified and I want to  
480 be able to go out and work in some field where I can make the world a  
481 little bit better. That's what motivates me to pursue, um, besides that  
482 curiosity getting towards the later end of game I'm hearing, there's  
483 interesting things to learn about and... you know, it's interesting so I  
484 want to learn about it. (Laughs) That doesn't necessarily mean, just  
485 because it's interesting doesn't mean you should study it and try to do  
486 well on the test but the test is, it's a condition of passing the class and to  
487 be in the class, you get to pass, if you want to get through the class, you  
488 have to pass the test. But what you get out of the class is what you put  
489 into it. I don't know. Um, but I'm also motivated by the decision I made,  
490 I decided to come do Engineering, I set aside the time already to study  
491 and do school, so I'm going to do what I decided earlier.

492

493 Interviewer:

494 So, to a certain extent, "I've come this far, why back out now?"

495

496 Student:



497 I've come this far, you know, to back out and still have to pay back my  
498 student loans (laughs) and I want to finish because I want to finish what  
499 I started.

500

501 Interviewer:

502 Okay. So if you were to make a pie chart of your motivations as a  
503 student to learn and study and stuff, what percent would us say you're  
504 motivated by your desire for a good grade versus your desire to learn?

505

506 Student:

507 (sighs) I would say desire to learn is higher than desire to get a good  
508 grade because you get a good grade, like, it's hard to divorce the two.  
509 Because, at least in the classes that I'm taking now, you can't get a good  
510 grade without learning and so, while learning is the primary and getting  
511 good grades is the secondary, um, I don't know. Say that question again.

512

513 Interviewer:

514 What percent are you motivated by your grades versus your desire to  
515 learn?

516

517 Student:

518 (silence) Maybe it could be phrased such that my desire to get a good  
519 grade is placed in the motivation to go study and learn because like I  
520 said, I've come this far, I want to get through it and to get through it, I  
521 have to get a good grade and to get a good grade, I have to learn and I'm  
522 not upset by that because there's a lot of things I want to learn but I think  
523 I lack the self-discipline to learn them on my own so having the  
524 classroom setting where there's tests and grades and stuff, um, lights a  
525 fire under me to actually do the work and have the structure where  
526 teacher assigns things, do these things, learn these things, apply these  
527 things. You know, that structure helps me to learn things that I wouldn't

528 know how to teach myself.

529

530 Interviewer:

531 Okay, so would you say it's accurate that in the long run, what you really  
532 want is to learn but you study for your grades because they give you,  
533 sort of, the discipline to do that learning?

534

535 Student:

536 The motivation, the discipline to do that learning comes from wanting to  
537 get a good grade but the desire to learn, the desire to learn is there, the  
538 actual motivation to learn is the grades, for me at least maybe. That's  
539 interesting because a lot of these things, like I would, and some of these  
540 things are really good to know. Maybe I'll have to use them in the future  
541 and maybe it's just good to learn all these different things. There are  
542 things that I wouldn't necessarily go out and find interest in, just purely  
543 by myself, like controls. I don't really have an interest in that but I've  
544 learned a bit now, I'm smarter than I was, I know a few more things than  
545 I did that I probably would not have gone out and tried to learn that on  
546 my own.

547

548 Interviewer:

549 Okay.

550

551 Student:

552 I don't know, that may or may not be related to your question.

553

554 Interviewer:

555 It's okay, so does that, sort of pattern follow the same for all of your  
556 classes, are there any classes that you just want to get a good grade in  
557 because you want to get out of there?

558

559 Student:

560 Oh, that's definitely decreased, in the past, that's been true but now that  
561 I'm in, you know for general education, like I don't, there are just things  
562 I don't care about, you know, or things that I think are interesting, but I  
563 don't necessarily want to study. Now that I'm in the more, you know, all  
564 my classes start with [mechanical engineering], I care more about  
565 learning, and I don't care so much about getting a grade and getting out.  
566 When I took my management class, that class was trash, I didn't learn  
567 anything, I got an A so it was good to get that A and get out of there.

568

569 Interviewer:

570 Okay, so in what ways are your grades important to you?

571

572 Student:

573 Uh, ultimately, I think that if the class is set up in such a way that the  
574 grades are a reflection of the effort I put it, and the amount that I've  
575 learned then what was the question again?

576

577 Interviewer:

578 In what ways are your grades important to you?

579

580 Student:

581 In that way, it's important to me as um, sort of a metric of how I'm  
582 applying myself, um, I guess I would rate a B in a very hard class much  
583 higher than an A in an easy class. So I guess the way I would rate the  
584 importance of my grade is in relation to how much work I had to put  
585 into the class. For example, I put very little effort into my statics class,  
586 however long ago that was, got an A whereas my B or a C in  
587 [programming for engineers], I worked my butt off for that so I'm much  
588 more proud of that lower grade, you know, it's something I can show off  
589 and say "Hey, I took this class and I got this grade in it." You know? I

590 completed this percent of everything that was coupled for me."

591

592 Interviewer:

593 Okay.

594

595 Student:

596 It was sort of a way of judging how well I've done. And taking into

597 account how much work was put in.

598

599 Interviewer:

600 Okay, what about learning? In what ways is that important to you?

601

602 Student:

603 It's important because you might use these things and just for the, it's

604 nice to know things. It's, the more you learn, it changes the way you see

605 the world, I think. So in that way, I think it's more personal importance

606 to learn new things.

607

608 Interviewer:

609 Can you elaborate on that a bit?

610

611 Student:

612 So, I don't know, can I?

613

614 Interviewer:

615 (laughs)

616

617 Student:

618 Um, I really enjoy that now that I've taken all this math and science, I

619 see the world in a little bit way than I did before and so sometimes that's

620 just neat and it's a fun way to think about things. Sometimes, it helps

621 resolve problems. When I help to solve problems, it's, I feel really cool,  
622 and I feel like everything I've learned is paying off.

623

624 Interviewer:

625 Would you describe it as satisfying?

626

627 Student:

628 Very satisfying, very rewarding when you can take the things that  
629 you've learned and even just, talk about them with other people or  
630 discuss things with people and maybe they know something else in  
631 addition to what you know and you can share those ideas. That's  
632 incredibly rewarding, so I would say, what's the question again?

633 (Laughs)

634

635 Interviewer:

636 In what ways is learning important to you?

637

638 Student:

639 It's important to me because it makes, it makes my life more interesting.

640 Coming up on winter break here and I'm terrified of the prospect of  
641 sitting around the house doing nothing all break so I have some learning  
642 projects set up for myself. Um, and that's just, it's personal fulfillment, I  
643 think. Uh, I really, I did a co-op last spring and it was great because the  
644 first two months of it was training, I was learning, learning, learning and  
645 the last two months of it was application of everything I've done. So I  
646 was able to learn things then apply them and that felt really cool. And I  
647 think, you know, I get really bored when I'm not learning so it's...

648

649 Interviewer:

650 Okay, you kind of described that as terrifying, can you go to into that?

651

652 Student:

653 Yeah, it is terrifying because you know, it's, when we have breaks in  
654 school and I don't, it's not enough time to really start anything but it's I  
655 don't really have anything to do and I just sit and play games or watch  
656 TV, it's a great way to, kind of get kind of sad. And that's not a nice  
657 feeling, so... I guess learning keeps my mind occupied and keeps it  
658 turning and keeps me looking forward. Whereas if I stopped learning, I  
659 kind of look back and just, you know, stagnate, maybe is a good word  
660 for it.

661

662 Interviewer:

663 Okay, let's say in theory your, uh, [stammer]

664

665 Student:

666 It's easy for you to say.

667

668 Interviewer:

669 Yeah. Let's say in theory you're enrolling in classes for next semester  
670 and there's some class that you need to take and you just have two  
671 options of when to take it and both work for your schedule but they're  
672 taught by different professors. So, maybe you know their reputation,  
673 maybe you've actually taken a class from them before but you know that  
674 Professor A, it's going to be more difficult to succeed in that class but  
675 you know that you will come out of that class having learned a lot, but  
676 Professor B, you're going to be able to succeed in that class without  
677 much effort but you likely won't learn as much coming out of it, which  
678 class would you enroll in?

679

680 Student:

681 You kind of take into account everything else in the same semester but if  
682 I had the leeway, I'd probably take it from the more difficult professor

683 and that's a little bit of how my schedule is next semester. I have options  
684 for electives and I'm picking more based on the professor. There's one  
685 professor I want to learn from, I know he's difficult, it's a hard class but I  
686 could take that or I could take an easy A but I have all the time on my  
687 schedule next semester, I'm going to take the more difficult class and  
688 learn something new.

689

690 Interviewer:

691 Why would you choose the more difficult professor?

692

693 Student:

694 Uh, because I haven't had that professor yet and you know, it's not  
695 necessarily a subject that I'm really that interested in but it's something  
696 that I want to have under my belt and I want to learn, I want to challenge  
697 myself and try to see what I can do.

698

699 Interviewer:

700 Okay, so, can you think of a situation in which your answer might  
701 change?

702

703 Student:

704 If I was really busy or if there was just, nothing or if that class just did  
705 not interest me at all. Or if it was a class that both didn't interest me and  
706 that I saw no utility in learning, then I'd probably take the easier route.

707

708 Interviewer:

709 So, like, I don't know, a class on the lifecycle of ring worms or  
710 something? (Laughs)

711

712 Student:

713 Right, like I have, you know, it's probably very fascinating but it's not

714 something that I have an interest so I you know, I don't care. (Laughs)

715

716 Interviewer:

717 All right so we mentioned some bits about studying earlier, can you tell

718 me now about your learning strategies?

719

720 Student:

721 So now, I put a lot more effort into my homework and try to fly through

722 it less, so go home, practice, practice, practice. You have to do the

723 practice and I found that I learned the contents better if when I do the

724 homework I write out the steps and why I'm doing each step. It's like

725 when you write code, I've got in the habit now of putting in comments

726 about exactly what I'm doing...

727

728 Interviewer:

729 Comment, comment, comment.

730

731 Student:

732 So my code's very long but you know, it'll be nice to have two sets of

733 information than one little statement and um, yeah, that's the biggest

734 change I think I've made in my homework is not being afraid to turn in

735 heavy stacks of homework, because it takes me three pages to do

736 something that someone else does in one page.

737

738 Interviewer:

739 Okay.

740

741 Student:

742 Yeah, I write to myself and I write big and I write in a neat orderly way.

743

744 Interviewer:



745 Engineering is not eco-friendly with paper.

746

747 Student:

748 No, I wonder if the professors have some deal with the manufacturers of  
749 engineering paper. (Laughs)

750

751 Interviewer:

752 (laughs) All right, so how have you come to use these strategies?

753

754 Student:

755 How did I come to use them?

756

757 Interviewer:

758 Mm-hmm (affirmative)

759

760 Student:

761 Uh, well, it's, you know, you do a little bit of Google searching for  
762 what's the best way to study and I think, the ones that put up is the  
763 Feynman Technique, it's the one where you ask, you ask questions in  
764 your notes and explain them as if you were explaining them to someone  
765 who didn't know what you were talking about. I think that goes back to,  
766 if you can explain something then that shows you understand it. So a lot  
767 of things that I can, give me an equation sheet, I can solve a bunch of  
768 stuff but I may not know exactly why. But if I can explain why then that  
769 shows that I can understand it. So if I can explain to myself why I'm  
770 doing the things I'm doing in my homework, then that shows that I've  
771 come to some level of understanding. When I wasn't always doing that  
772 in my homework, then I would do poorly on the test and wonder, you  
773 know, why didn't I understand this concept? Because I flew through the  
774 homework and didn't pay that much attention. I was more focused on the  
775 answer than on the process.

776

777 Interviewer:

778 Okay, how have these strategies changed over time?

779

780 Student:

781 How have they changed over time? Well, it is kind of a recent

782 development, at least in my Engineering classes, that way I've studied

783 (silence). It is a recent development in my studying habits, so it's going

784 from flying through the homework to actually flaming, you know,

785 writing it out as if it was a solution, explaining the steps. That's... the

786 only real change I think I've made so far.

787

788 Interviewer:

789 Okay, how did it feel when you realized you needed to find a better way

790 to study?

791

792 Student:

793 It was annoying because the extra work (laughs) but it was work that

794 had to be done, you know. It's, I was struggling in class and I was like, I

795 got to do something, what do I do? Well, I'm going to understand my

796 homework more because that's the kind of stuff that shows up on the

797 test, that's the stuff we're learning so...

798

799 Interviewer:

800 How did you feel once you got a system that worked?

801

802 Student:

803 Felt really good. I went to my professor and said "Hey, I've changed the

804 way I do my homework and it's helping." And he was like "Well, good

805 for you." (Laughs)

806

807 Interviewer:  
808 (laughs) just kind of like "Why are you telling me this?"  
809  
810 Student:  
811 Yep, pretty much. (Laughs)  
812  
813 Interviewer:  
814 Okay, so...  
815  
816 Student:  
817 And I told all my friends, I was like "Hey, look how good my homework  
818 looks." You can follow this, it makes sense.  
819  
820 Interviewer:  
821 Beautiful.  
822  
823 Student:  
824 Yeah.  
825  
826 Interviewer:  
827 All right, so....  
828  
829 Student:  
830 And plus, showing it to my friends, they can point out any flaws that I  
831 make because they, if I'm flunking a class, they're doing better than I  
832 am.  
833  
834 Interviewer:  
835 Mm-hmm (affirmative)  
836  
837 Student:

838 You know, we help each other out.  
839  
840 Interviewer:  
841 So, sounds like you kind of take this as a point of pride?  
842  
843 Student:  
844 Oh yeah, when I do something that looks good, I feel good about it.  
845  
846 Interviewer:  
847 Okay, do you think you've maybe started enjoying being so detailed  
848 with your homework?  
849  
850 Student:  
851 I have! I have because it's nice to look at the homework that I've done  
852 and be able to follow it without having to remember exactly what I was  
853 thinking at that time when it's obvious there, that this is what I'm doing  
854 and this is why.  
855  
856 Interviewer:  
857 Mm-hmm (affirmative)  
858  
859 Student:  
860 And it's clean, it looks good, it's you know...  
861  
862 Interviewer:  
863 Aesthetically pleasing.  
864  
865 Student:  
866 Exactly.  
867  
868 Interviewer:

869 All right, in general, how much effort would you say that you put into  
870 your classes?

871

872 Student:

873 I put a lot more than I used to. Especially at the beginning of this  
874 semester, I was putting in a lot of effort and I wasn't getting much out,  
875 um, but that changed probably about halfway through as I refined my  
876 techniques and started writing my homework to myself. No, that's  
877 probably more, probably about the same amount of effort but getting a  
878 lot more out when I changed the way I was doing it.

879

880 Interviewer:

881 Okay, do you feel like you put in more or less effort compared to your  
882 peers?

883

884 Student:

885 Um... depends on the class. If it's a class I'm struggling with, I intend to  
886 put in more effort, I think, than my peers. If it's a class that I'm not  
887 struggling with, I maybe put in less. So it's directly tied to how much I'm  
888 struggling with the class.

889

890 Interviewer:

891 Okay, so, do you feel like you learn more from classes that you have to  
892 put more effort into?

893

894 Student:

895 Yes.

896

897 Interviewer:

898 Can you elaborate on that?

899

900 Student:  
901 Like I said before, if, um, you know, I feel like I learn a lot or get a lot  
902 more out of classes I get lower grades in because they're the ones I really  
903 struggle with and have to figure out why am I not understanding this,  
904 what can I do to get better at it. Whereas, you know, classes where I get  
905 an A in, it's not that difficult, you know, why put in the effort if it makes  
906 sense to me already?

907  
908 Student:  
909 Maybe those classes just aren't challenging, maybe it's just come easier  
910 to me or maybe the class needs to be restructured or something. I don't  
911 know.

912  
913 Interviewer:  
914 Okay. Now, think about a subject or class or something where you had  
915 to put in a lot of effort to succeed and tell me about it.

916  
917 Student:  
918 Uh... they're very frustrating.

919  
920 Interviewer:  
921 Can you think of a specific one?

922  
923 Student:  
924 Yeah, I can think of a few.

925  
926 Interviewer:  
927 (laughs)

928  
929 Student:  
930 Particularly [programming for engineers].

931  
932 Interviewer:  
933 Okay.  
934  
935 Student:  
936 It was really hard for me because I'm not a programmer, I'd say I say I  
937 program with a sledgehammer.  
938  
939 Interviewer:  
940 Did you do it in Python?  
941  
942 Student:  
943 Yeah.  
944  
945 Interviewer:  
946 Okay.  
947  
948 Student:  
949 Yeah, I remember spending hours and hours and hours on my homework  
950 and getting about 50 percent on them. (Laughs) Which was really  
951 annoying, um but I think it gets to a point where you know, if I don't  
952 understand it, I don't understand it and I can't get things to work out and  
953 I can't figure out how to do things, it gets really frustrating and there's,  
954 and you know what, that's enough work on this assignment, I'm going to  
955 do something else.  
956  
957 Interviewer:  
958 Burn out?  
959  
960 Student:  
961 Burn out, yeah, yeah, and I think that happened this semester too

962 because the first half of the semester was so much work and 18 hours of  
963 homework a weekend and now that things are slowing down, it's really a  
964 struggle to put effort into anything. So I'm coasting now and you know,  
965 I'm not gonna, people get so caught up in finals week, I don't think it's  
966 that big of a deal because if you've put in the effort up until finals week,  
967 you shouldn't have to put in extra effort during finals week, I think.

968

969 Interviewer:

970 That makes sense.

971

972 Student:

973 And that's the philosophy that I followed. It served me pretty well  
974 because I'm usually pretty relaxed during finals week and you know,  
975 whatever happens, happens. I've put in my work up front and now we'll  
976 see if it pays out.

977

978 Interviewer:

979 Okay.

980

981 Student:

982 And how I feel about it.

983

984 Interviewer:

985 How did you feel about having to put so much effort into that class?

986

987 Student:

988 You know, it was annoying. It was not nice, but I did learn a lot, and it  
989 was a valuable experience. Um, and that experience, you know, in terms  
990 of I feel a lot more comfortable with the stuff now, still, my peers are  
991 much better at it than I am but uh, I can, you know, I know how to use  
992 Python now. If there's something I don't know how to do, I can go look



993 up, I know what to search for online to figure out how to do it. Um, and  
994 I'm comfortable messing around with it. And then, say that question  
995 again.

996

997 Interviewer:

998 Uh, how did you feel about having to put so much effort in?

999

1000 Student:

1001 Where was I going with that? I was going to say something, what was  
1002 it? How do I feel about putting so much effort into it? Oh, it was also,  
1003 it's also a good, it um, you know, it teaches you not to give up.

1004

1005 Interviewer:

1006 Perseverance.

1007

1008 Student:

1009 Yeah, you get through something, it's like, man, you get through that  
1010 class and you get the, next class, like this is hard but I got through that  
1011 other class, I can get through this class. You know.

1012

1013 Interviewer:

1014 Okay, what did you get out of that experience?

1015

1016 Student:

1017 Perseverance and a love-hate relationship with coding.

1018

1019 Interviewer:

1020 (laughs)

1021

1022 Student:

1023 It's a great tool but it's also you know, it's finicky. Um, what'd I get out

1024 of it? The great respect for people who are good at it, you know?  
1025  
1026 Interviewer:  
1027 No joke there.  
1028  
1029 Student:  
1030 Yeah, yep. (Laughs)  
1031  
1032 Interviewer:  
1033 All right, if you had to take a similarly difficult class, would you?  
1034  
1035 Student:  
1036 Oh, probably. I think I am taking a similarly difficult class next semester  
1037 with Mechatronics.  
1038  
1039 Interviewer:  
1040 Hm... [Like an "oh THAT one" hm]  
1041  
1042 Student:  
1043 Um, so, we'll see how that goes.  
1044  
1045 Interviewer:  
1046 I like Mechatronics, it was hard but it was a good class.  
1047  
1048 Student:  
1049 It's hard but it was a good class, you know, it's something I want to  
1050 learn. Some of it, it won't come naturally to me, I think because I'm not  
1051 an electronic person, you know. I'm not good with circuits, I can do  
1052 them if I can go back and look at my notes and stuff but... it won't click  
1053 for me.  
1054

1055 Interviewer:  
1056 Mm-hmm (affirmative), all right. Now, think about a subject or a class  
1057 that you were able to succeed without much effort at all.  
1058  
1059 Student:  
1060 Oh, yeah.  
1061  
1062 Interviewer:  
1063 And tell me about that.  
1064  
1065 Student:  
1066 I remember taking a management class and putting in zero effort and  
1067 getting an A. I was upset I even had to go to that class because it was, I  
1068 didn't learn anything. You know. To this day I don't even remember  
1069 anything from that class besides that the teacher tried to say that you  
1070 lose 20 percent of meaning when you translate from one language to  
1071 another and I asked "How do you quantify meaning?" And I didn't get a  
1072 good answer and the teacher didn't say "Well, you know, I don't know  
1073 how you quantify meaning but um, I'll get back to you on that." She said  
1074 something else that, you know, seemed like she was trying to cover up  
1075 for not knowing what it was.  
1076  
1077 Interviewer:  
1078 Yeah, although from the sound of it, you're bilingual so you have an idea  
1079 of what's going on there.  
1080  
1081 Student:  
1082 Right, yeah.  
1083  
1084 Interviewer:  
1085 Or at least, you're probably as bilingual as I am. (Laughs)

1086  
1087 Student:  
1088 Yeah so I know how hard it is to translate things. I've got a great respect  
1089 for people who can translate because it's hard. But how do you quantify  
1090 that?  
1091  
1092 Interviewer:  
1093 Yeah.  
1094  
1095 Student:  
1096 Yeah, that's ridiculous, I don't know how you would...  
1097  
1098 Interviewer:  
1099 It would depend on the sentence because are you trying to quantify  
1100 meaning in a philosophical concept or are you trying to say "he went to  
1101 the store"?  
1102  
1103 Student:  
1104 Yeah, it's a lot more...  
1105  
1106 Interviewer:  
1107 I don't think you lose a lot of meaning in "He went to the store."  
1108 (Laughs)  
1109  
1110 Student:  
1111 (laughs) it's a lot more complex than saying "You lose 20 percent of  
1112 meaning."  
1113  
1114 Interviewer:  
1115 Mm-hmm (affirmative)  
1116

1117 Student:

1118 And so, I didn't get anything out of that class and I wasn't happy about  
1119 having to go take it.

1120

1121 Interviewer:

1122 Okay, so how did you feel about having to put so little effort into that  
1123 class?

1124

1125 Student:

1126 Oh, it was a joke. You know, and then I'm paying for this but I'm not  
1127 getting anything out of it. Because if you don't put any effort into it, I  
1128 didn't, I don't remember anything about that class because I didn't put  
1129 any effort into it.

1130

1131 Interviewer:

1132 It was rip off?

1133

1134 Student:

1135 Yeah, pretty much, it was go sit in lecture for an hour, all right. Okay.

1136

1137 Interviewer:

1138 I'm here.

1139

1140 Student:

1141 I think I even got a 100 percent on one of the tests and I don't even know  
1142 what was on it. I think it was multiple choice and that's more of a gauge  
1143 of your test taking skills than your knowledge of the material.

1144

1145 Interviewer:

1146 Mm-hmm (affirmative)

1147

1148 Interviewer:  
1149 What did you get out of that experience, if anything?  
1150  
1151 Student:  
1152 Um, I feel grateful that I'm not a Business major. That's one thing I got  
1153 out of it. I feel grateful that, you know, being in mechanical with all the  
1154 open ended questions, you know, not multiple choice, you know, do  
1155 work and get an answer. You have to at least have half an idea what  
1156 you're doing to get through the test and I like that. Um, so I got an  
1157 appreciation for what I am doing by dabbling in what I'm not doing.  
1158  
1159 Interviewer:  
1160 Okay.  
1161  
1162 Student:  
1163 I mean maybe, maybe other Business classes are more worthwhile but  
1164 the one I took wasn't.  
1165  
1166 Interviewer:  
1167 Would you take a similarly easy class? If you didn't have to.  
1168  
1169 Student:  
1170 Uh, you know, it depends. If I didn't have to, I wouldn't take it.  
1171  
1172 Interviewer:  
1173 (laughs)  
1174  
1175 Student:  
1176 You know, to fill a credit, I have one case idea that I have left to fill but  
1177 I think I'll be able to fill that with something I find interesting but if I'm  
1178 for some reason unable to then, it might come down to taking some easy

1179 class just to get the credit and that's annoying, but.

1180

1181 Interviewer:

1182 Okay, think about someone you know who puts in a lot of effort to

1183 succeed, you see them succeed but you also see them working their butt

1184 off every time you look at them, tell me about what does that tell you

1185 about how smart they are?

1186

1187 Student:

1188 I don't know how much it tells me about how smart they are, it tells me

1189 how hard they work, which you know, I don't know if that has much

1190 relation to how smart they are. Maybe they're able to do well on their

1191 tests and perform well because they put in the effort and then, you know,

1192 that's good for them.

1193

1194 Interviewer:

1195 Okay.

1196

1197 Student:

1198 It's admirable.

1199

1200 Interviewer:

1201 Do you think that's more important than how smart they are?

1202

1203 Student:

1204 I don't even know how you define smart, so um...

1205

1206 Interviewer:

1207 Well, what matters is really how *you* define smart.

1208

1209 Student:

1210 I suppose, um, but I would much rather work with someone who works  
1211 hard and struggles with the concepts, I think, than with someone who  
1212 doesn't have the discipline that's learned from struggling with material,  
1213 but who, who gets it naturally.

1214

1215 Interviewer:

1216 Okay.

1217

1218 Student:

1219 One thing I think back to a lot was when I was in middle school and  
1220 high school and band. There were some students who were really good  
1221 at the instrument right off the bat, but they were lazy and didn't practice.  
1222 Then there were some who weren't that great, but they put in a lot of  
1223 work and got really good, and I have a lot more admiration for the  
1224 people who put in a lot of work to get really good than for the people  
1225 who, you know, they clicked and then they didn't improve at all after  
1226 that. Then you get kids who are both, and they're just amazing.

1227

1228 Interviewer:

1229 Oh yeah, I had one of those in my orchestra, she-she was very good but  
1230 also, like, she spent more time playing her instrument than reading and  
1231 more time reading than sleeping and we were all like "How are you  
1232 alive?" (Laughs)

1233

1234 Student:

1235 Yep.

1236

1237 Interviewer:

1238 Uh, she actually had a slight scar mark under her chin from where the  
1239 violin rested.

1240



1241 Student:  
1242 Oh, that's intense.  
1243  
1244 Interviewer:  
1245 Yeah.  
1246  
1247 Student:  
1248 Wow. I was actually really musical before I came to mechanical but  
1249 music was too hard so...  
1250  
1251 Interviewer:  
1252 (laughs)  
1253  
1254 Student:  
1255 (laughs) True story.  
1256  
1257 Interviewer:  
1258 So, you came to another hard field?  
1259  
1260 Student:  
1261 Well, this is easier, much easier. (Laughs)  
1262  
1263 Interviewer:  
1264 All right, in what way do you think mechanical is easier than music?  
1265  
1266 Student:  
1267 Music is very complex, and it takes a lot of practice. Additionally, just in  
1268 terms of logistics, just my understanding is that there's a lot of stuff you  
1269 have to do outside of class, so if you're taking 12 hours, you're busy like  
1270 you're taking 18 and so that's logistically hard if you have to work and  
1271 pay rent and stuff. And in that respect, I think mechanical is easier

1272 because you know, you go to class 12 hours, you do your homework,  
1273 you still have time left over, you know.

1274

1275 Interviewer:

1276 Okay. Now, think about a student you know who doesn't have to put in a  
1277 lot of effort to succeed and tell me how, what does that tell you about  
1278 how smart they are?

1279

1280 Student:

1281 I don't know what it tells me because you know, I don't know what it  
1282 tells me. Good for you, it makes sense to you. But... honestly, I don't  
1283 know, I think that for the students who don't have to put in a whole lot in  
1284 a certain class, maybe, that you know, maybe that's their particular  
1285 interest and so there are a well familiar with the subject. Um, so I guess  
1286 what that would tell me is, either things just click for them and that's  
1287 great but also annoying because it doesn't click for me and... (Laughs)

1288

1289 Interviewer:

1290 A little bit of jealousy there?

1291

1292 Student:

1293 Well not so much jealousy but, well, specifically, there's one person in  
1294 my friend group who is, thinks really fast, very smart, knows a lot of  
1295 stuff but he works, you know, 20 miles an hour, I work at ten miles an  
1296 hour so when we work together, it's like "Hold on, slow down. I'm still  
1297 stuck at this point, why are we doing this way?" He's like hm, wait, ten  
1298 miles ahead. It's hard to work with people who work really fast, at a  
1299 different speed.

1300

1301 Interviewer:

1302 I've been on both ends of... (Laughs)

1303  
1304 Student:  
1305 Yep, yep. And it's really good nesting too because as soon as you don't  
1306 know what you're doing in mechanical, get in the group where you're the  
1307 smartest person there and you know what's going on and everyone else  
1308 is asking questions, that's great because then you get to explain things  
1309 and help your...  
1310  
1311 Interviewer:  
1312 And sometimes...  
1313  
1314 Student:  
1315 And sometimes you're sitting there like "What's going on? What are we  
1316 doing here?" And you have to have things explained to you.  
1317  
1318 Interviewer:  
1319 Sometimes, it's easier to understand after you tried to explain it to  
1320 them...  
1321  
1322 Student:  
1323 Yeah, yeah.  
1324  
1325 Interviewer:  
1326 All right, so now tell me about a specific time when you received  
1327 feedback that you were not performing to expectations?  
1328  
1329 Student:  
1330 Okay, so um, I remember in my co-op, I had to go training and learn a  
1331 certain skill, um, and at the end of that two weeks, we had our  
1332 performance reviews and got our grades in the course and we were  
1333 going into my teacher and my, you know, all the instructors and getting

1334 the feedback and I said "Well, I thought I'd done pretty well in the  
1335 class," walk in and they say "Well, you did pretty average." It was like  
1336 wow, okay, I know I'm average but I'm not used to hearing it (laughs) so  
1337 that's humbling, that's humbling. Um, but, as far as being told I'm not  
1338 meeting expectations, I really really struggled in my more upper level  
1339 classes where you don't really go and talk to the professor, they don't  
1340 really say "Hey, you've gotta step it up." It's more of, you decide that  
1341 from, I decide that if I have to do better. The professor, you know, is  
1342 there if I'm to say like "hey, what can I do better?" But the impetus is on  
1343 me and not necessarily someone saying you're not doing as much as you  
1344 can.

1345

1346 Interviewer:

1347 Okay.

1348

1349 Student:

1350 It's me saying I'm not doing as much as I can.

1351

1352 Interviewer:

1353 Okay, so in those situations, how did you respond?

1354

1355 Student:

1356 Well, it's humbling you know, it's kind of a like a kick in the butt, well  
1357 you've gotta do better, got to figure out how I can do better.

1358

1359 Interviewer:

1360 Okay, what did you do, uh, to sort of give yourself that kick in the butt?

1361

1362 Student:

1363 I don't know. I guess when it was me telling myself I had to do better, I  
1364 changed the way I studied, with my course and my co-op, the course is

1365 already done and so there wasn't anything I could go back and do but it's  
1366 just, you know, when I get to the next thing, you know, take it that much  
1367 more seriously.

1368

1369 Interviewer:

1370 Okay.

1371

1372 Student:

1373 Which I didn't have the opportunity to put in the practice because that  
1374 was my last class (laughs) but...

1375

1376 Interviewer:

1377 Okay. So what was the outcome of your response?

1378

1379 Student:

1380 Well, going back to my studying, I changed the way I studied and that  
1381 resulted in getting better grades.

1382

1383 Interviewer:

1384 Mm-hmm (affirmative)

1385

1386 Student:

1387 And I feel like I knew the material better, after explaining it to myself  
1388 every time I did homework.

1389

1390 Interviewer:

1391 Okay, did you learn anything from that experience?

1392

1393 Student:

1394 I learned how to study. I learned that the way that I learn best is by, or at  
1395 least, the way that I learned better than I have previously is by

1396 explaining things to myself as I go through my homework.

1397

1398 Interviewer:

1399 Okay, what advice would you give to someone that's struggling with a  
1400 similar situation?

1401

1402 Student:

1403 To, you know, do some, you know, spend a little bit of time doing some  
1404 research on different ways of studying. That's what I did, I got online,  
1405 like you know "how do you study effectively?" And see what it says and  
1406 then try things out, you know. Um, try doing your homework a different  
1407 way, try you know, I don't know, getting rid of distractions around you  
1408 when you're studying I'd just advise them to try different things until  
1409 they figure what it is that allows them to learn better.

1410

1411 Interviewer:

1412 Okay.

1413

1414 Student:

1415 Because I know I may learn differently than the person next to me.

1416

1417 Interviewer:

1418 All right, do you care if your professors judge you when you do poorly?

1419

1420 Student:

1421 It's not nice, but you know, it's, if I do poorly on a test, and they think  
1422 you either got to work harder and it's justified, I agree, so I imagine if  
1423 they judge me for doing poorly, I'd probably judge myself the same way  
1424 and that's just more motivation to do better next time.

1425

1426 Interviewer:

1427 To get your butt in gear.

1428

1429 Student:

1430 Exactly.

1431

1432 Interviewer:

1433 What about your peers?

1434

1435 Student:

1436 My peers? I don't really care that much um, I guess. If my peers think

1437 poorly of me because I did poorly on a test or something, then I don't

1438 think I really have peers, I don't surround myself with people who would

1439 think like that.

1440

1441 Interviewer:

1442 Okay.

1443

1444 Student:

1445 So, like, I guess I don't really know, um, I don't think I'd want to be

1446 around people who would think like that, so I'd probably do my best to

1447 stay away from that kind of person.

1448

1449 Interviewer:

1450 Okay, is there anybody that you do care if they judge you when you do

1451 poorly?

1452

1453 Student:

1454 I don't really care. (Laughs)

1455

1456 Student:

1457 Because I know that, just because I do poorly on something doesn't

1458 mean I'm dumb, it just means I did poorly on that one thing and you  
1459 know, if someone else thinks that I'm dumb because I did poorly on  
1460 something else, I think there's a problem with the way they think so I  
1461 don't really care, um, yeah, that's how I feel about that.

1462

1463 Interviewer:

1464 Okay, do you think you learn more from an experience that's  
1465 challenging or not very challenging?

1466

1467 Student:

1468 A challenging experience, yeah, o- definitely.

1469

1470 Interviewer:

1471 Were you about to say "obviously"?

1472

1473 Student:

1474 I was going to say "obviously" but I don't like saying "obviously", I  
1475 don't know, I don't think that's what I meant to say either..

1476

1477 Interviewer:

1478 (laughs) Okay, why don't you like using the word "obviously"?

1479

1480 Student:

1481 Well because, the thing is that may be obvious may not be obvious to  
1482 someone else, you know? Um, there's good times to use "obviously",  
1483 like "this is obviously white", this board, you can see it. But

1484

1485 Interviewer:

1486 Some might say it's gray. (Laughs) Just a nitpick.

1487

1488 Student:



1489 But often, often when I'm struggling with a concept, it's because, one  
1490 thing I do, is I'll leap onto the more complex stuff without really  
1491 mastering the simple stuff. So I'll get over here and be like "why isn't  
1492 this working out? There's something wrong with it." And it's just this  
1493 elementary concept that I'm missing. And it's so frustrating. (Laughs) So  
1494 and obviously, that's what was wrong, but you know, didn't get it. Just  
1495 this one little piece of the puzzle that, you know, if I go back and think  
1496 things through slowly, generally, it'll come but that's where most of my  
1497 problems come in, I think is...

1498

1499 Interviewer:

1500 Okay.

1501

1502 Student:

1503 Those fundamental things as I'm doing something more complex.

1504

1505 Interviewer:

1506 Okay, does it matter to you if you succeed during a challenging

1507 experience if you learned a lot from it?

1508

1509 Student:

1510 Oh, I mean, I fail all the time at challenging experiences and that was

1511 hard but now I know what not to do so I, I don't know, I feel like even

1512 experiences of failing are educational, you can get something from it,

1513 it's not, as long as you're learning from it, it's not a bad... as long as

1514 you're learning from it and nobody got hurt.

1515

1516 Interviewer:

1517 (laughs) That's important, that nobody got hurt.

1518

1519 Student:

1520    Yep, if you perform poorly, and it ends up with, you know, serious like  
1521    that and somebody getting hurt, that's bad.

1522

1523    Interviewer:

1524    Yeah, that's very bad. So, now that we've talked through all these  
1525    different ideas related to motivation and effort and challenges, how  
1526    would you summarize what you shared with me?

1527

1528    Student:

1529    Say that one more time.

1530

1531    Interviewer:

1532    We've been talking about ideas related to motivation and effort and  
1533    challenges so how would you summarize what you shared with me?

1534

1535    Student:

1536    Motivation, effort and challenges.

1537

1538    Interviewer:

1539    And anything else that you feel... you know, worthy.

1540

1541    Student:

1542    Yeah... well I think that if school was easy, it would have no value, so  
1543    the fact that these things are challenging, that I'm doing something hard  
1544    and putting in effort is where a lot of the value comes from and what I'm  
1545    getting out of it obviously. Um, but, in terms of motivation, I wonder, I  
1546    wonder. Where does that motivation come from...? I guess I'm not quite  
1547    sure, um, I think that if there was no challenge, there'd be no motivation.

1548

1549    Interviewer:

1550    Mm-hmm (affirmative)

1551  
1552 Student:  
1553 Because the first half of my semester here was, this semester was very  
1554 challenging, so I was very motivated to do all the stuff but now that I  
1555 have less challenge towards the end of the semester, it's very hard to  
1556 motivate myself to do anything. Um, maybe there's a balance of  
1557 challenge, you know, an optimal challenge level that results in most  
1558 motivation and I wonder what that is. But if you'd be there the entire  
1559 time, I think it'd be a lot easier to struggle through all the things you  
1560 need to struggle through in terms of learning and then, you get a bunch  
1561 out of it.

1562  
1563 Interviewer:  
1564 Okay, have you gained any insights from our discussion?

1565  
1566 Student:  
1567 I don't know, it gave me things to, you know, think about. Things that  
1568 require being thought about some more, you know. I've often wondered  
1569 why I'm motivated to do well in school, and I think a lot of it comes also  
1570 from curiosity now that I'm dealing with more interesting classes  
1571 because it is interesting, the way the world works, the way physical  
1572 things work... and I've been pretty confident in myself that you know,  
1573 smart or whatever is hard to define but just because, you know, there's  
1574 things I think I'm smart but there's things I don't know anything about  
1575 and things I'm very bad at.

1576  
1577 Interviewer:  
1578 Sure.

1579  
1580 Student:  
1581 But just because I don't know anything about, you know, Biology,

1582 doesn't mean I'm not smart.

1583

1584 Interviewer:

1585 Right.

1586

1587 Student:

1588 And just because someone else doesn't know anything about

1589 Engineering doesn't mean they're not smart. Maybe they're really good

1590 at something else or really good at physics...

1591

1592 Interviewer:

1593 Like biology.

1594

1595 Student:

1596 Exactly. You know, there's different, I wish I could learn everything

1597 about everything but you have finite time, finite ability to stuff things in

1598 your head, so... got to pick and choose. But I don't know.

1599

1600 Interviewer:

1601 Do you think your finite ability to stuff things in your head is more

1602 related to your head itself or the time you have to stuff things in it?

1603

1604 Student:

1605 Both.

1606

1607 Interviewer:

1608 Okay.

1609

1610 Student:

1611 Definitely both.

1612

1613 Interviewer:  
1614 All right.  
1615  
1616 Student:  
1617 And you have to factor in motivation too because sometimes I just want  
1618 to sit and do nothing. (Laughs)  
1619  
1620 Interviewer:  
1621 Yeah.  
1622  
1623 Student:  
1624 Yep.  
1625  
1626 Interviewer:  
1627 Is there anything else you'd like to share?  
1628  
1629 Student:  
1630 Uh, I don't know. I don't think so.  
1631  
1632 Interviewer:  
1633 All right. Thank you very much.  
1634  
1635 Student:  
1636 Cool.

1     **Interview Transcript 18: Robert**

2     Interviewer: Allison Adams

3     Date Interview conducted: 02/15/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Our goal today is for us to have a detailed discussion about your beliefs  
8     about or perceptions of the nature of your intelligence. The discussion  
9     will inform my understanding of the perceptions of engineering grad-  
10    undergraduate students and will help future decisions about the  
11    engineering program and how it can be improved for all students. I  
12    wanna hear your own thoughts and perceptions. I expect that they'll be  
13    different from what everybody thinks. I don't really care what everybody  
14    thinks. I wanna know what you think. And I aim to- aim to understand  
15    your perspective, so I will ask questions like, "What do you mean by  
16    that?" "Can you elaborate?" Et cetera. These types of questions can end  
17    up being a bit awkward as they require you to really reflect on your  
18    experiences. So I'll leave you a good, long time to answer. Uh, do you  
19    need clarification, let me know. Any questions?

20

21    Student:

22    No.

23

24    Interviewer:

25    All right. So tell me about yourself as a student.

26

27    Student:

28    Uh, so I'm at [university] for this is my third semester. Um, I was a  
29    transfer from [previous university]. Um, before that I went to a  
30    community college, so I've kinda been all over the place.

31

32 Interviewer:  
33 Okay.  
34  
35 Student:  
36 And I currently have a physics degree already.  
37  
38 Interviewer:  
39 Okay. So let's see. What kind of a student do you think you are? Like do  
40 you- adjectives. Give me adjectives.  
41  
42 Student:  
43 Um, like how I learn like in the classroom? Or-  
44  
45 Interviewer:  
46 Anything you feel like it might be relevant.  
47  
48 Student:  
49 Um, I feel like I- I feel like I grasp like information pretty good the first  
50 time. I'm definitely one that needs to, you know, not everything comes  
51 extremely easy to me. Like I'm obviously good at math and science, but  
52 I'm definitely one that needs to review material, you know, you know,  
53 after lectures. Um, for exams, I spend multiple hours prepping. Um, a lot  
54 of times I go through examples. Like, um, I'll say instead of like, you  
55 know, some people learn good, like with verbals. I like graphics. And so  
56 pictures.  
57  
58 Interviewer:  
59 Visuals?  
60  
61 Student:  
62 Visuals, yeah.

63

64 Interviewer:

65 Okay. So tell me about what is it- what do you think about when you  
66 think about a student who grasps info for the first time? Or grasps it the  
67 first time easily.

68

69 Student:

70 Um, I would say that maybe they don't need it described in detail too  
71 much, maybe they don't need- they don't have to go, maybe, to the  
72 professor to elaborate on content in class already. Or, um, maybe  
73 homework- maybe like homework comes easy the first time. You're not  
74 asking too many questions, but I'm definitely one that's, uh, very verbal,  
75 like I ask questions in class as well.

76

77 Interviewer:

78 Okay. So why do you consider yourself to be the kind of student who  
79 grasps things easily the first time?

80

81 Student:

82 Um, I guess, uh, I feel like my communication skills are very well, so I  
83 feel like I'm a good- I- I talk well, easily with others, but I also listen  
84 very well with others. So I think kinda understand the perspective of the  
85 professor, maybe, or like what direction they're going with something.

86

87 Interviewer:

88 Okay. So you might attribute it to so- sort of a category of people skills?

89

90 Student:

91 Yeah.

92

93 Interviewer:



94 Okay. Do you find that your people skills help you outside of class as  
95 well?

96

97 Student:

98 Definitely.

99

100 Interviewer:

101 All right. So you also said that not everything comes e-extremely easily  
102 to you. Can you tell me about that?

103

104 Student:

105 Um, I kinda just attribute it to the kind of time I spend to like get good  
106 grades. So I feel like some people are like, yeah, or I- I already finished  
107 something. And I'm like, I've gotta spend like a lot of time making sure I  
108 understand the material, especially when I'm doing like homework, I  
109 feel like, you know, I'm- I'm writing it out, but if I don't understand like  
110 a concept, then I try to like dig deeper into like why am I doing this or  
111 whatever? Towards some- maybe it just comes easily to some people.

112

113 Interviewer:

114 Hmm. Okay. Let's see. What other questions can I ask here? Um, do you  
115 feel like it's a pretty common thing to be a more visual than auditory  
116 learner?

117

118 Student:

119 Um, I feel like maybe so. I feel like maybe it is easier to be a visual  
120 learner. I feel like more people probably are visual learners. I think that's  
121 why, you know, people that I'm around a lot, they like, you know,  
122 examples of- like examples or something, a visual, um- I just feel like- I  
123 dunno. I feel like when you're just doing verbal, you're just using one of  
124 your senses, where when you get a visual, you get the verbal and the-

125 you get to see it as well, so you just get to use more of your senses. I feel  
126 like that kinda helps it.

127

128 Interviewer:

129 Okay. Now if I ask you to tell me what an average student is, what  
130 would you describe?

131

132 Student:

133 Average student as in like?

134

135 Interviewer:

136 Just if you could take all the population, somehow come up with a mean,  
137 like in the middle of every- every quality of a student, what would you  
138 tell me?

139

140 Student:

141 Like as a learning in the classroom? Or-

142

143 Interviewer:

144 Could be learning in the classroom, it could be habits outside the  
145 classroom.

146

147 Student:

148 Uh, as an engineer?

149

150 Interviewer:

151 Sure.

152

153 Student:

154 Um, I feel like most would probably be visual learners. And I feel like- I  
155 feel like nowadays, since- I f- hmm, how do I word this? I feel like it

156 probably doesn't just come e- like easy to most people. I feel like most  
157 people, especially with engineers, you know, they have the basic, the  
158 good math and science skills, but in terms of those classes, I feel like  
159 they have to at least some might work harder. I mean, I guess I'd try to  
160 compare it to like, you know, a C, D student, in terms of average. But-

161

162 Interviewer:

163 Okay. Uh, do you consider yourself to be an average student or not?

164

165 Student:

166 I feel I'm above average.

167

168 Interviewer:

169 Okay. So what about you is above average?

170

171 Student:

172 I think my time commitment. Um, you know, I truly care about like my  
173 grades. I try to get, you know- I'm trying to be definitely an A- an A  
174 student. At worst, B student. Um, I think I go beyond class material to  
175 make sure I understand, um, you know, beyond class time to make sure I  
176 understand the material that was presented. Um, extensive time  
177 studying, that I- I spend more than one or two hours prepping for, you  
178 know, exams or something like that. Um, I feel like because of my  
179 communication skills, I might ask more questions in class and outta  
180 class than the average student. Hmm- Yeah, those are the first things that  
181 kinda- kinda come to mind.

182

183 Interviewer:

184 Okay. So now hypothetically, let's say you took an exam in a class and  
185 the professor hands it back and you look at that exam and you feel like  
186 you succeeded on it. How do you react and why?

187  
188 Student:  
189 Um, like jump in the air.  
190  
191 Interviewer:  
192 (laughs)-  
193  
194 Student:  
195 Like if there's nobody else in the room, I'd like definitely show it. But,  
196 uh, I dunno, just 'cause of how much time I put into it, you know, I feel  
197 like, you know, whatever you put your time into is probably the- one of  
198 the most important things to you. So, you know, when you succeed after  
199 putting all that time into it, that's a really good feeling. And vice versa  
200 when you don't succeed. You know, you feel like, you know, my heart  
201 drops or something, like, dang, you know, that was like a waste of my  
202 time and-  
203  
204 Interviewer:  
205 Okay.  
206  
207 Student:  
208 That is definitely important to people.  
209  
210 Interviewer:  
211 So it's kind of a reward for good work?  
212  
213 Student:  
214 Yes, exactly.  
215  
216 Interviewer:  
217 Okay. So what do you consider to be success on an exam?

218

219 Student:

220 I guess I- I guess how much- again, it goes back to the time thing. If I  
221 didn't put a lot of time into it. And I usually associate what grade I  
222 should get based on the time I put into it. So if I put a lot of time into  
223 something and I get a great grade on it, then that was like to go one on  
224 one. If I put like, you know, a little bit of time, like an hour in, and I end  
225 up getting a C or a D, I can't be that disappointed because I didn't put too  
226 much time into it, that I'm obviously didn't care about it too much.

227

228 Interviewer:

229 Okay. And do you still consider it a success at that point? Or is it just  
230 not as important?

231

232 Student:

233 Pro- yeah, probably just not as important.

234

235 Interviewer:

236 Okay. Does a grade curve, uh, alter your perception of the success?

237

238 Student:

239 Curve as in?

240

241 Interviewer:

242 Like sometimes the professors say- will say, "Instead of 90% and they'll  
243 get an A, it's 85% and up and get an A." Or I've even been in a class  
244 where it was basically 50% up, get- is an A.

245

246 Student:

247 Oh, yeah.

248

249 Interviewer:

250 (laughs)-

251

252 Student:

253 I've definitely- that definitely changes my perspectives, based- if I just  
254 got the exam back and it has a certain number on it and he goes, "And I-  
255 when I changed it to where the curve, that is an A," then I changed how  
256 I feel about it.

257

258 Interviewer:

259 Okay.

260

261 Student:

262 For sure. So it's definitely based on like letter grade at that point.

263

264 Interviewer:

265 Okay.

266

267 Student:

268 Like definitely drives the emotions towards it.

269

270 Interviewer:

271 So it's more dependent on the teacher's expectations than the number  
272 itself?

273

274 Student:

275 Yeah, yeah.

276

277 Interviewer:

278 Okay. What if you did better than someone you considered to be smarter  
279 than you are? Like you glimpsed their grade as you got your test back or

280 something.

281

282 Student:

283 Um, after I saw how good I did, and then I saw that I did better than

284 someone who I feel like understands the material better than I do-

285

286 Interviewer:

287 Who's smarter or whatever-

288

289 Student:

290 Smarter, general- Yeah. Um, then I just, you know, exponentiates how

291 much better I feel about the exam. You know, if I got an average grade

292 and they look like they're smarter than me and they still got below

293 average grade, then, you know, I'd just feel okay about it, but knowing

294 that I feel already better about it. And then when you hear about the

295 average from the class, especially with a class of engineers, it's not just a

296 class of random people.

297

298 Interviewer:

299 Mm-hmm (affirmative).

300

301 Student:

302 You've got most people in there are pretty smart. And you're about even

303 the average, that makes me even feel better, too, sometimes. So I kinda

304 compare to people I know and then also the class average. How did I

305 compare to everybody?

306

307 Interviewer:

308 Okay. So you would feel that in general, and people in an engineering

309 class would be sort of smarter than the average at the population?

310

311 Student:

312 Yes.

313

314 Interviewer:

315 Okay. So would you share with anyone else that you did well on your  
316 exam?

317

318 Student:

319 Yes.

320

321 Interviewer:

322 All right. Who?

323

324 Student:

325 Um, if I knew somebody else in the class, sometimes what I'll do is like  
326 a- if- if I knew I did good and I asked like my friend or someone else in  
327 the class, I asked how they did and they did good, then I would tell them  
328 what I got. But if I heard they did bad, then I probably wouldn't tell them  
329 what I got so it doesn't make them feel worse. You know? Um-

330

331 Interviewer:

332 All right. And in that case you might just say, "I did pretty okay on it  
333 and-"

334

335 Student:

336 Yeah, exactly. I wouldn't-

337

338 Interviewer:

339 Elaborate.

340

341 Student:



342 Yeah, I would just- I wouldn't elaborate or I'd tell- tell my parents. My  
343 parents always wanna hear about how I did-

344

345 Interviewer:

346 Yeah.

347

348 Student:

349 Brothers and sisters.

350

351 Interviewer:

352 Parents are like that.

353

354 Student:

355 Yeah.

356

357 Interviewer:

358 (laughs)-

359

360 Student:

361 My brothers and sisters, they're older than me, they're always asking  
362 how I'm doing in school, so I definitely let them know how I do. And  
363 even, honestly, when I did bad gr- get a bad grade, I'll usually- I'll tell  
364 my parents or something, yeah. I struggled. Or my roommates, they're  
365 all engineers, I'll tell them, too. "Yeah, like that- that test really got me."

366

367 Interviewer:

368 Okay. So what if- what about the person that was smarter than you?

369 Would you shy away from telling him your grade?

370

371 Student:

372 If I asked them and they got a better grade than me?

373  
374 Interviewer:  
375 You got a better grade than the smarter person? It- would you- would  
376 you share with anyone else that you got a better grade than that person?  
377  
378 Student:  
379 Oh, no.  
380  
381 Interviewer:  
382 Okay.  
383  
384 Student:  
385 No.  
386  
387 Interviewer:  
388 It would- it would just be not worth mentioning?  
389  
390 Student:  
391 No. I think at that point, I'm just like, okay, you know, they're pretty  
392 smart so I feel like I did good on this. Like, good for me. And then-  
393  
394 Interviewer:  
395 So it's more personal.  
396  
397 Student:  
398 Yeah.  
399  
400 Interviewer:  
401 Okay. What if instead you got a test back and you didn't feel like you  
402 succeeded on it? How would you react and why?  
403

404 Student:

405 I'll just feel like I have like a hard time of it, like, you know, I get the-  
406 that shivering like feeling, like, you know, like- like I- I disappointed  
407 myself, like I should've done better. But most of the time after I take an  
408 exam, I kinda have a feeling of the range-

409

410 Interviewer:

411 Mm-hmm (affirmative).

412

413 Student:

414 Of, you know, my grade can- can be. And usually it's in that range or I  
415 try to like undermine it a little bit just in case it was better just to like  
416 hype myself up like in case it's better. Like, yeah, it's even better than I  
417 thought. Better-

418

419 Interviewer:

420 Protective pessimism?

421

422 Student:

423 Yeah, exactly. Always like that. But, uh, yeah, that- if I get a bad grade  
424 and then I see like what the average was and I'm even below the  
425 average, then that kinda- it just- it just- it's- it brings you down.

426

427 Interviewer:

428 Okay. Uh, what is the biggest reason that you feel like it brings you  
429 down. Is it the grade? Is it the fact that you put an effort and didn't get a  
430 reward for it?

431

432 Student:

433 I think, yeah, I associate it with like, again, my time, and then how  
434 important my grades are to me, you know, knowing that your grades

435 affect, you know, whether it be, you know, scholarship money's based  
436 on that; you know, a job is gonna be based on, you know, that- you  
437 getting a bad grade in that class brings down a GPA that maybe an  
438 employer- an employer looks at.

439

440 Interviewer:

441 Mm-hmm (affirmative).

442

443 Student:

444 And they differentiate between two people and, you know, that's just-  
445 that's just how it works.

446

447 Interviewer:

448 Okay. So what if someone that you don't consider to be as smart as you  
449 did better than you on that test?

450

451 Student:

452 Um, I guess, did I do good on the test, too? Or did- they just did better?

453 Or...-

454

455 Interviewer:

456 Uh, answer both ways.

457

458 Student:

459 Okay. So if I did well and they did better, I don't think it'd affect me too  
460 much. I feel like I'd feel about the same, um, knowing that I got, you  
461 know, still a good grade. But, you know, there's- in my head, they're  
462 smarter than me, they should get a-

463

464 Interviewer:

465 But this one's not as smart as you.

466

467 Student:

468 Oh, not as smart as me. Okay. Um, yeah, I got a good grade, I don't  
469 think it'd- it'd- it would bother me.

470

471 Interviewer:

472 Yeah, and then-

473

474 Student:

475 As long I got a good grade. Now if I got a bad grade or an average grade  
476 and they got a- you know, a good grade still, then I'll probably reflect  
477 on, you know, the time spent on it. If I still spent a lot of time on it, then  
478 it definitely brings me down. Like, either I studied the wrong way or,  
479 you know, I gotta do something different, because I know that or at least  
480 I feel that I'm smarter than that person. So I need to change something,  
481 'cause it'd probably, you know, bring you down more than the actual  
482 grade did.

483

484 Interviewer:

485 Okay. What if, uh, that- that person wasn't the only person who did  
486 better than you but like most of the class did better than you?

487

488 Student:

489 So I'm below the average or something?

490

491 Interviewer:

492 Yeah.

493

494 Student:

495 That's probably worst case scenario. Like, no, like I- well, I guess it  
496 depends what the average of the class was. If- no. I- I know that there

497 was a time when the average of the class was like a B range and I think I  
498 got below that. I think regardless I- I still don't like that feeling. You  
499 know, even if I got a B, which is considered, you know, still a good  
500 grade, that if I'm below the average, then, uh, I didn't succeed in my  
501 mind.

502

503 Interviewer:

504 Okay. Why do you feel that way?

505

506 Student:

507 I guess I just feel like I'm, you know, below average student or below  
508 average in that class because, you know, more- most of the people in  
509 that class at that particular time on that particular test were smarter than  
510 me because of that grade.

511

512 Interviewer:

513 Okay. So who would you be willing to share that poor test score with?

514

515 Student:

516 Um, close friends. I mean, close friends in the class. I mean, I don't  
517 know if I'd tell friends the exact grade I got, I'd just probably tell them,  
518 yeah, I did- I did poor.

519

520 Interviewer:

521 Okay.

522

523 Student:

524 But no, again, family. Family. Yes, all the time, I'd tell them, yeah, you  
525 know, I screwed up, I got a D on my exam. So-

526

527 Interviewer:

528 Okay. Why would you not wanna tell the exact grade to your friends?

529

530 Student:

531 Um, I guess it- if they're in that class also and they did good, you know,

532 they kinda- they'd kinda look down at you at that point, I guess. You

533 know, not maybe as a person, but just in terms of the knowledge you- or

534 how- your time commitment to the class or something. They- that might

535 be a reason.

536

537 Interviewer:

538 Okay. Why do you feel like they would look down on you for that?

539

540 Student:

541 I guess- I guess it's kinda like when I do well on an exam and I see the

542 average and they show like, you know, a graph of, you know, the grades

543 and I see the people that got below the average, kinda how I feel towards

544 those people. I'm like, man, you know, they didn't- they didn't try. Like,

545 they- you know, they didn't care about their- their score or something.

546 Or- and then vice versa. I'm in that position, that's how I feel like people

547 deem my grade.

548

549 Interviewer:

550 Okay. How would you feel about knowing someone did really poorly on

551 the exam but you had seen them working their butt off for it? Like you-

552 you had seen them in the lab all the time.

553

554 Student:

555 If I saw that, I'd be like, man, they definitely put the time in. That's just-

556 you know, if I was that person, I'd feel horrible. Like I- I'd feel bad for

557 them, then. I don't look down on them. I'd feel bad for them. Like,

558 maybe they didn't fully put the time in, you know, but I wish they

559 woulda got a better grade.

560

561 Interviewer:

562 Okay. So does it matter to you if your peers think you're smart?

563

564 Student:

565 I think as an engineer, yeah, uh, to an extent, yeah. I feel like just

566 knowing, you know, when you're friends with other engineers, I feel like

567 just the title of being in an engineering program kinda infers that you're

568 smart, so they don't feel like you're smart, then, I dunno, I- I feel like in

569 general, yeah.

570

571 Interviewer:

572 Okay.

573

574 Interviewer:

575 Why do you feel like it matters that they think you're smart?

576

577 Student:

578 Um, I guess I just- I think I'm like more of a competitive person, so, you

579 know, I wanna be at least as smart or smarter, um, than, you know, the

580 people around me. But, you know, I wouldn't- if I was them and I didn't

581 feel like they were as smart, you know, you know, I wouldn't change

582 how I feel towards that person, but I think that's probably just the

583 competitive side of me that I'm always wanting to, you know, you know,

584 be- have the best grade and like even if I, myself, if I have one of my

585 roommates in the class and I wanna see their score and, you know, I try

586 to wanna beat their score all the time, and I think that's more just a

587 competitive thing.

588

589 Interviewer:



590 Why do you think you're so competitive?

591

592 Student:

593 I think that's just- it was just in me. Sports, growing up my whole life, I  
594 feel like I just have a competitive nature. But, again, grades mean a lot  
595 to me, so, you know, anything that means a lot to you and there's other  
596 people doing the same thing, there's always like that comparative thing.

597

598 Interviewer:

599 Okay. Do you feel the same way about peers that might not be in  
600 engineering? Like just- if you had to take a humanities class for [school  
601 specific requirement] or something and one of the students in there, do  
602 you care if they think you're smart?

603

604 Student:

605 Yeah, definitely. I feel like they should think like, yeah, he's an  
606 engineer, here, he- they should feel like I'm pretty smart.

607

608 Interviewer:

609 Okay. Why do you care?

610

611 Student:

612 I just feel like engineers are like, I dunno, I don't wanna say smarter, but  
613 I guess they're- I guess in terms of school, they're- they ha- I don't know  
614 how to word it without sounding like those people are dumb. Uh-

615

616 Interviewer:

617 (laughs)-

618

619 Student:

620 But it's not that they're all like dumb, it's just I feel like engineer is like a

621 higher quality degree. And so people who are pursuing like that higher  
622 quality degree, like somebody who's tryna be a doctor or, you know, you  
623 know, going to law school or something, I feel like those- there's a  
624 prolific set of, you know, degrees that are very challenging, where those  
625 people are, on average, smarter than maybe just average people in  
626 general.

627

628 Interviewer:

629 So like medical field, STEM field, law?

630

631 Student:

632 Yeah.

633

634 Interviewer:

635 Okay.

636

637 Student:

638 Yeah.

639

640 Interviewer:

641 Okay. What about your professors? Do you care if they think you're  
642 smart?

643

644 Student:

645 I guess it depends how close I am with the professor. There's one  
646 professor that I really, really like that I got to know and he became my,  
647 uh, advisor. Maybe to him I feel like, you know, I want- I want him to  
648 think I'm smart. But in general, on a professor to professor basis, no. I  
649 feel like a lot of times you don't get to know your professor that well, in  
650 a larger school especially.

651

652 Interviewer:

653 So do you feel like it just kinda doesn't matter whether your professor  
654 thinks you're smart?

655

656 Student:

657 Yeah, I don't think it matters and I don't think- sometimes I feel like- I  
658 mean, I don't feel like they care, usually, more of the time, regardless.

659 You know, they have so many students in a class that as long as the  
660 average and the- maybe the T evals come back good, then they're  
661 probably pretty happy.

662

663 Interviewer:

664 Okay. What about a professor in a smaller class?

665

666 Student:

667 When I was at my other school, I feel like, you know, they definitely  
668 expressed all the time and like went to more expense to make sure that  
669 you're being as successful as you can, so in terms of the- me- them  
670 thinking I'm smart, it might meant- might've meant more during that  
671 time.

672

673 Interviewer:

674 So you care more if they are sort of paying more personal attention to  
675 you?

676

677 Student:

678 Yeah, perhaps. Yeah. You know, a lot of times in the smaller  
679 classrooms, you know, maybe they- you- they ask you a question more  
680 personally instead of asking, you know, 150 kids. Or, you know, one kid  
681 might answer or like, you know, they might reference you as like a- your  
682 name, you know, them knowing your name-

683

684 Interviewer:

685 Mm-hmm (affirmative).

686

687 Student:

688 And you being comfortable just talking to them, I feel like that- I dunno,

689 just that camaraderie makes it a lot better and probably since it makes it

690 more personal, I want them to- I want them to think I'm smarter, that I'm

691 trying and-

692

693 Interviewer:

694 Okay.

695

696 Student:

697 Things like that.

698

699 Interviewer:

700 So if a professor that you do have a more personal relationship with,

701 why do you care if they think you're smart?

702

703 Student:

704 That's kinda like the friends thing.

705

706 Interviewer:

707 Hmm.

708

709 Student:

710 You know, you're not competing with a professor. But, um, you're still-

711 you wanna be I guess in that small class and you're getting close with

712 that professor, you want him to think that you're smarter than the

713 average student in that class, perhaps.

714

715 Interviewer:

716 Okay. Do you feel like there's any sort of benefit to the professor  
717 thinking you're smart?

718

719 Student:

720 Smart, no? But I feel like if you develop a close relationship, they're  
721 more willing to help you on things.

722

723 Interviewer:

724 Okay.

725

726 Student:

727 Like in terms of questions you might have and stuff like that. But in  
728 terms of how smart you are or how- no, I don't think so.

729

730 Interviewer:

731 Okay, so it's just more how you wanna be seen than anything?

732

733 Student:

734 Yeah.

735

736 Interviewer:

737 Okay. So tell me about what motivates you to pursue an engineering  
738 degree?

739

740 Student:

741 Um, high school. I was really good at math and sciences, so I- and I- and  
742 my high school, since it was bigger, I had the opportunity to take some  
743 engineering classes. So I was like, okay, this might be a route I wanna  
744 take. So let's take these, you know, general classes. And so I had an

745 aerospace class I took, a digital electronics class I took. And I- you  
746 know, I succeeded at them and I really enjoyed them. So I got the  
747 chance to go to community college and like think about it more, like- so  
748 at one point, I'm wanting to be an electrical, and I found I wasn't good at  
749 coding. So let's not do that. And so then I went to, you know, next  
750 school to get my physics degree. The more I thought about it and more I  
751 did research, you know, mech- a mechanical, which is the one- what I  
752 am-

753

754 Interviewer:

755 Mm-hmm (affirmative).

756

757 Student:

758 Um, is more broad, I feel like, and more hands on things, and I feel like  
759 that just fit my personality the best.

760

761 Interviewer:

762 Okay. So you'd say it was kind of a combination of you're good at it and  
763 you enjoy it?

764

765 Student:

766 Yes.

767

768 Interviewer:

769 Okay. Why do you feel like you enjoy it? Like what about it?

770

771 Student:

772 Like, it's challenging. Like, problem solving's challenging. And I feel  
773 like if you had to explain an engineer in a few words, you know,  
774 problem solvers. And so I feel like those kinda two aspects kinda drove  
775 me to it.

776

777 Interviewer:

778 Okay. Now let's say we're making a pie chart of your motivations as a  
779 student to sit down and study and work hard. How much of it do you  
780 think you'd be motivated by your grades versus your desire to learn the  
781 subject matter?

782

783 Student:

784 About 90% grades. There's, in terms of time, at [current university], I  
785 bet there's been maybe- I've been here three semesters, maybe taken 40-  
786 some hours. Maybe three or so of those classes I've been interested in.  
787 And one of- some of them you might get in and you might not think  
788 you're interested at first, and they kinda grab your attention with some  
789 things, which is nice. Or sometimes you go into a class and you're  
790 interested in and the professor drives you away from the topic and like  
791 you're not interested any more. But definitely I'd say about 90% is grade  
792 driven.

793

794 Interviewer:

795 Okay. Why do you feel like it's 90% grade driven?

796

797 Student:

798 I feel like a lot of times I feel like the class doesn't like matter to what I  
799 might be doing later on or they maybe ask for time on things like  
800 homework that's just really extensive and, I mean, I'm understanding it,  
801 the material, but I feel like sometimes that you just gotta like be on to  
802 like taking your time, which- I dunno, that's kind of splitting hairs,  
803 because, you know, to have that prolific degree, you know, you gotta be  
804 able to put time into it and stuff like that. But-

805

806 Interviewer:

807 But you feel like maybe sometimes they ask for more time than is  
808 reasonable?  
809  
810 Student:  
811 Maybe not more time, but what you're doing in that time. I feel like-  
812  
813 Interviewer:  
814 Okay, so it's not that they're asking for more time than is reasonable, but  
815 more time than is reasonable for the amount of subject matter you're  
816 learning?  
817  
818 Student:  
819 Yes. Yeah. Or like n- I don't wanna say quality of time, but like what  
820 they have me doing. I feel like-  
821  
822 Interviewer:  
823 Busy work?  
824  
825 Student:  
826 Yeah. There you go. There we go. Yeah, I feel like it's, a lot of times,  
827 busy work.  
828  
829 Interviewer:  
830 Okay. Is that 90%-10% the same for all of your classes?  
831  
832 Student:  
833 In terms of?  
834  
835 Interviewer:  
836 Like-  
837



838 Student:

839 Like just engineering or-

840

841 Interviewer:

842 Whatever.

843

844 Student:

845 Hmm- Yeah, I guess I've got to consider, you know, all the classes I've

846 been in, and I've, you know, sat around and thought about like if I had to

847 pick, if I was- you know, when I finish my degree, you know, where do-

848 what classes do I feel like I definitely had to take and I grabbed

849 something from. You know? I could probably think of maybe- I guess it

850 depends what field you end up going in and what your workplace is, but

851 maybe, you know, five to seven classes where I was like, yeah, that was

852 a good class, you know, that I needed this to know some things in that

853 class. You know, maybe put those two together. So- but there's

854 definitely some times where I'm like, you know- especially like a gen

855 ed. I'm like why do I have to-

856

857 Interviewer:

858 Like speech class?

859

860 Student:

861 I didn't mind speech class.

862

863 Interviewer:

864 Okay.

865

866 Student:

867 Because I- I do feel like people need to be able to speak, especially, uh, I

868 feel like definitely employment, like I find vocal skills are very, very,

869 very good, so I don't mind-

870

871 Interviewer:

872 Sure.

873

874 Student:

875 But maybe like a- you need good writing skills, but like English II. Like-

876

877 Interviewer:

878 Okay.

879

880 Student:

881 You know, or I had to take an appreciation of architecture class.

882

883 Interviewer:

884 (laughs) - I've heard of that one.

885

886 Student:

887 Yeah. And it was basically just show up. And I was like, well, you

888 know, wh-why?

889

890 Interviewer:

891 Okay.

892

893 Student:

894 So-

895

896 Interviewer:

897 So of those five to seven classes that you do feel like will be relevant to

898 you, do you think that those numbers would change for them?

899

900 Student:  
901 The what?  
902  
903 Interviewer:  
904 The- the 90% grades, 10% learning. Do you think that would change for  
905 those classes that you did think were important?  
906  
907 Student:  
908 Yeah.  
909  
910 Interviewer:  
911 Okay. What would- do you think they were?  
912  
913 Student:  
914 Hmm- I guess after, uh, it was all said and done and I knew how  
915 important they were, I'd probably say 60-40, 50-50.  
916  
917 Interviewer:  
918 And that would be 60% grades? Or-  
919  
920 Student:  
921 Yeah.  
922  
923 Interviewer:  
924 Okay. So describe to me in what ways are your grades important to you.  
925  
926 Student:  
927 I think it reflects me as a student.  
928  
929 Interviewer:  
930 Okay.

931  
932 Student:  
933 Um, I guess when I look on like my resume or something and I see that  
934 number like where my GPA is, you know, I want the employer to be  
935 impressed or impressed compared to others that they're looking into. I  
936 feel like, you know, a lot of times, employers, if you go like onto apply  
937 online, almost everyone has, "What's your GPA? Is your GPA in this  
938 range?" And it's usually on the upper end. And-  
939  
940 Interviewer:  
941 Yeah, they usually like three point something.  
942  
943 Student:  
944 Yeah. So I guess if I'm on the lower end of that section of the range, I'm  
945 like, man, you know, there's probably gonna be people that beat me out  
946 just based on GPA instead of kind of the person I am.  
947  
948 Interviewer:  
949 Okay. In what ways is your learning important to you?  
950  
951 Student:  
952 Um, I guess it depends if it's that- in those cl- in that class range that I  
953 feel like is important. Um, or like will I use it later on. So if it's one of  
954 those classes, I think it's very important that, you know, I understand,  
955 'cause- then you might use it later on in life in your career or whatever.  
956  
957 Interviewer:  
958 Mm-hmm (affirmative).  
959  
960 Student:  
961 So in those terms, I think it's, you know, very important. My learning

962 and- I mean, there's some classes where it's- you learned it first semester  
963 and the next semester it's gone. Like, I mean, it's just short term. So for  
964 those classes, you know, I don't- my grade's important to me, but my  
965 learning, which I feel like those are two different things-

966

967 Interviewer:

968 Yes.

969

970 Student:

971 Is less important.

972

973 Interviewer:

974 So you- you feel like you just need to remember as long as the final?

975

976 Student:

977 Yep.

978

979 Interviewer:

980 Okay. So now let's say you're enrolling for classes next semester. Uh, I  
981 mean, I know you're probably gonna graduate, but just pretend you are.

982 And you need to enroll in a core course required for your major. And,

983 uh, you find that there's two sections and both work for your schedule

984 with your other classes, but they're taught by different professors. And

985 you know both these professors, Professor A, you know that you're

986 gonna have to work your butt off in that class, but you might come out

987 of that class having learned a bit more.

988

989 Student:

990 Okay.

991

992 Interviewer:

993 And then Professor B, you probably will have a pretty easy time keeping  
994 your grade up, but you might not learn the knowledge quite as  
995 thoroughly as you would with Professor A. Which one would you enroll  
996 in?

997

998 Student:  
999 Do I feel like the class is important?

1000

1001 Interviewer:  
1002 It's required for your major, so I guess probably.

1003

1004 Student:  
1005 Hmm. That's a tough one. I guess I'll answer it based on like I don't  
1006 know what my other course load's like, because I guess if I had a tough  
1007 course load, then I'd probably go with the easier option.

1008

1009 Interviewer:  
1010 Mm-hmm (affirmative).

1011

1012 Student:  
1013 And with a light course load, then I could maybe consider the- you  
1014 know, learning more. But if I was just looking at the class by itself-

1015

1016 Interviewer:  
1017 Mm-hmm (affirmative).

1018

1019 Student:  
1020 I'd probably go with the one that was easier.

1021

1022 Interviewer:  
1023 Okay. Why would you do that?

1024  
1025 Student:  
1026 GPA boost. You know, get a better grade, which I know I wouldn't learn  
1027 as much, grasp like the learning, but I feel like I'd- you know, I feel like  
1028 as an- for employers, most of the time they just look at GPA and then  
1029 you learn most of the stuff you need to learn at the job.  
1030  
1031 Interviewer:  
1032 Okay.  
1033  
1034 Student:  
1035 So I feel like as long as it's helping me GPA, I'll learn what I need to  
1036 when I get to my career.  
1037  
1038 Interviewer:  
1039 Okay. Would you also pick the easier professor if it wasn't required for  
1040 your major? Like required but not part of your core curriculum?  
1041  
1042 Student:  
1043 Like as an elective?  
1044  
1045 Interviewer:  
1046 Yeah. Or [school specific requirement] or something.  
1047  
1048 Student:  
1049 Uh, if it was like a gen ed, I'd definitely choose the easier professor.  
1050  
1051 Interviewer:  
1052 Okay.  
1053  
1054 Student:

1055 Hands down.  
1056  
1057 Interviewer:  
1058 What if it- it was a tech elective but it was something that you chose  
1059 because it sounded really interesting?  
1060  
1061 Student:  
1062 I might choose the better professor then.  
1063  
1064 Interviewer:  
1065 Okay.  
1066  
1067 Student:  
1068 Yeah. Definitely.  
1069  
1070 Interviewer:  
1071 Just 'cause you actually want to learn the stuff in that case?  
1072  
1073 Student:  
1074 Yeah. Yeah. Like I feel like there's one class now that it sounded cool  
1075 and now that I'm in it I like it even more, so-  
1076  
1077 Interviewer:  
1078 Mm-hmm (affirmative).  
1079  
1080 Student:  
1081 And the homework is extensive but I- I enjoy it and I- I feel like it  
1082 challenges me but I like the challenge.  
1083  
1084 Interviewer:  
1085 Okay.



1086  
1087 Student:  
1088 Because I think the- the content is- I think it's cool. So-  
1089  
1090 Interviewer:  
1091 Okay. So can you think of any situations where your answers might  
1092 change? Or do you feel like you've kinda covered everything?  
1093  
1094 Student:  
1095 For that scenario?  
1096  
1097 Interviewer:  
1098 Mm-hmm (affirmative).  
1099  
1100 Student:  
1101 Yeah, can think of a situation if- so like thermo one, thermo two.  
1102  
1103 Interviewer:  
1104 Mm-hmm (affirmative).  
1105  
1106 Student:  
1107 I might pick the harder professor for thermo one to make thermo two  
1108 easier for me.  
1109  
1110 Interviewer:  
1111 Okay.  
1112  
1113 Student:  
1114 So I don't- so- yeah, for like classes that like lead into each other and I  
1115 know that I have to take the next class, then I might take the challenging  
1116 professor so like I know the stuff really well.

1117  
1118 Interviewer:  
1119 Okay, so sequential classes?  
1120  
1121 Student:  
1122 Yeah, I could see why I would take- like I know that my thermo class,  
1123 my teacher is very challenging. And- but he also was personal, he made  
1124 it personal, too, and I thought he was a very good professor and it's  
1125 making thermo two easier.  
1126  
1127 Interviewer:  
1128 Okay. Now tell me about your strategies for learning and studying.  
1129  
1130 Student:  
1131 I like to write everything out.  
1132  
1133 Interviewer:  
1134 Okay.  
1135  
1136 Student:  
1137 So a lot of people you see like print, you know, a f- I have a professor  
1138 provides PowerPoints beforehand they'll print them out. I like to like  
1139 write everything. I feel like I learn better if I'm writi- if I write it. Uh,  
1140 physically write it, than if I'm just like sitting there watching, then I  
1141 might like doze off or something. I feel like if I'm engaged in the class, I  
1142 learn better. Um, I like it when professors post videos, in case you miss  
1143 something.  
1144  
1145 Interviewer:  
1146 Mm-hmm (affirmative).  
1147

1148 Student:  
1149 Especially since I write everything out, a lot of times professors will go  
1150 pretty fast and-  
1151  
1152 Interviewer:  
1153 Oh yeah.  
1154  
1155 Student:  
1156 I'll mark on their PowerPoint or something, like look at it again or  
1157 review the video at this time or something. So I like when professors do  
1158 that, I feel like that helps a lot.  
1159  
1160 Interviewer:  
1161 Okay. Do you like it if they provide a PowerPoint that you could write  
1162 on as you go along and have it kind of organized neatly?  
1163  
1164 Student:  
1165 I don't do that, but-  
1166  
1167 Interviewer:  
1168 Okay.  
1169  
1170 Student:  
1171 I would- I'd- I'd definitely like that if there was space with the  
1172 PowerPoint to write stuff, I feel like that would- that would help a lot.  
1173 So like you see what they wanted you to learn and you wrote notes about  
1174 what they were saying about that.  
1175  
1176 Interviewer:  
1177 Yeah, okay.  
1178

1179 Interviewer:  
1180 My, um- my controls professor, he gave us sort of a booklet at the  
1181 beginning of class and told us to go print it off and it's like kind of like  
1182 a- his lecture notes, except that they're incomplete, so he's expecting you  
1183 to fill things in as you go along, but it helps you kind of-  
1184  
1185 Student:  
1186 I like that.  
1187  
1188 Interviewer:  
1189 Keep with him and he's writing on the same thing in front of you, so  
1190 you- he knows you have room to write what you need.  
1191  
1192 Student:  
1193 Yeah, I definitely like that. Or the teachers, the professors that write out  
1194 everything, all their notes. So like you can like write with them. I guess  
1195 you can't get behind in that aspect unless they're just a faster writer than  
1196 you.  
1197  
1198 Interviewer:  
1199 Mm-hmm (affirmative).  
1200  
1201 Student:  
1202 But I feel like the ones that just put up a PowerPoint and then they try to  
1203 read through it, they go through that stuff a lot faster-  
1204  
1205 Interviewer:  
1206 Mm-hmm (affirmative).  
1207  
1208 Student:  
1209 So then it's more challenging for me, which is why I have to put like

1210 PowerPoint or something, like go back and review it, and then, you  
1211 know, they filled the whole PowerPoint out, but just- I like- I like  
1212 writing it.

1213

1214 Interviewer:

1215 Okay. Um, h-how did you come to use that strategy?

1216

1217 Student:

1218 Uh, when I got to [previous university], uh, where I started taking- so I  
1219 took calc one, two, and three, and chem one, at, uh, community college,  
1220 and I guess when I got to my next school, I just felt like I needed more-  
1221 like there was just more notes to be taken. And I just- I dunno, I think I  
1222 just started doing it that way. I don't- I was never really taught how to  
1223 like- I feel like they need to do a better job of teaching students how to  
1224 learn in a class compared to like how learned they are in terms of, you  
1225 know, visual or verbal or whatever. But- I dunno, I don't know why.  
1226 Um- I probably didn't start out that way, for sure. But I think I just found  
1227 that like I grasped the material better, so going along maybe I just picked  
1228 it up along the way that I was like- 'cause probably when I first started  
1229 college, if there was someone who just had a PowerPoint, I'd be like,  
1230 awesome, like I can just listen to them. And maybe then I think I  
1231 struggled with that concept in one of my calc classes. Um, I had to take  
1232 it through- I was at one physical college, but they didn't have a professor  
1233 there that taught it. So another college I Skyped it and we had to watch it  
1234 and that was horrible, 'cause the professor wasn't like right there in front  
1235 of me. And so I think because of that, I like wrote everything out  
1236 extensively. And I just think I found that that worked a lot better for me.

1237

1238 Interviewer:

1239 Okay.

1240

1241 Student:  
1242 Because I always like can like add the notes of like a little thing they  
1243 said here and I know exactly where they were at when they were writing  
1244 it. I just- I- I feel like it's my summary or my- my own way of what they  
1245 said, like it turns it like it's- it's what they said but it's my way, you  
1246 know, like it's exactly how I learned it or whatever instead of, you know,  
1247 if they just said it and, oh, they said this but I'm not for sure how they  
1248 meant it, or something like that.

1249  
1250 Interviewer:  
1251 So in a way you make it personal?

1252  
1253 Student:  
1254 Yeah. Yeah, in a way. Yeah.

1255  
1256 Interviewer:  
1257 Okay. Do you have any other strategies that you use?

1258  
1259 Student:  
1260 In the classroom?

1261  
1262 Interviewer:  
1263 In the classroom or out of the classroom.

1264  
1265 Student:  
1266 Um, maybe for studying exams, I might. So if there is practice exams, I  
1267 will, you know, I like going through all the practice exams, depending  
1268 on if they just put one or if they put multiple. I like going through all of  
1269 them. And then I- I dunno, I guess I kinda go down like a- like a  
1270 sequential order, like a, you know, practice exams or quizzes that I've  
1271 taken, and then homework. And then notes and like the notes are kinda

1272 sprinkled in according to what I need them, whatever. But like usually,  
1273 uh, before an exam, like right before, maybe the morning of, I'll go one  
1274 last time through all my notes, you know, see if I missed anything. And,  
1275 uh, sometimes, I've gotten into the habit recently of highlighting  
1276 important things, which I haven't done that before: This is the first  
1277 semester I'm doing that. And so I'm like, okay, let's highlight the most  
1278 important things, make sure I'm not forgetting them. It's almost like  
1279 crossing them out. Like, okay, got that, got that, let's keep them in and  
1280 keep going on from there.

1281

1282 Interviewer:

1283 Okay. How- how has the- how did you come to use that strategy?

1284

1285 Student:

1286 Which one?

1287

1288 Interviewer:

1289 The- the one about, um, how you study for exams and highlighting?

1290

1291 Student:

1292 My first exam, my physics one exam, at a new col- my new college, I  
1293 did really, really bad.

1294

1295 Interviewer:

1296 Mm-hmm (affirmative).

1297

1298 Student:

1299 And most people did bad in that class. He was very challenging. But I  
1300 guess I just was like, I need to spend more time on it. And I'm like, how  
1301 am I gonna use my time? Or what's useful to me? And I think I just  
1302 kinda like picked that up along the way. I'm like, all right, well let's

1303 make sure I can- what's everything I can do in a reasonable amount of  
1304 time? So like if an exam was, then I would say if an exam was  
1305 Wednesday, I would spend three hours Sunday, Monday, Tuesday. And  
1306 then, you know, one day was just the practice exams with notes and one  
1307 day was just quizzes with notes. Maybe one day was just examples or  
1308 something like that. And I think it just came to like I want to spend a  
1309 certain amount of time on it, so what can I fill that time with? That'll be  
1310 useful.

1311

1312 Interviewer:

1313 Okay. How have your studying strategies changed over time?

1314

1315 Student:

1316 From when I first got to college?

1317

1318 Interviewer:

1319 Sure.

1320

1321 Student:

1322 Um-

1323

1324 Student:

1325 I think I've always- I knew- for like my first calc class was probably one  
1326 of the first ones where I'm like, "This is gonna be a challenging exam."

1327 Um, like if they gave you a cheat sheet, I- I feel like that was one of my

1328 first- that was probably one of the first times where I like wrote

1329 everything out and I'm like, I wanna get as much things on here as

1330 possible. And then I found like I didn't use it that much, 'cause he used it

1331 to basically study, which I think that's a good studying technique. That's

1332 probably one I use a lot. But I think that kinda converted to where I

1333 write everything out in class. But now I think I still do that, write



1334 everything out, if I get a cheat sheet I still write it out. I find if I don't get  
1335 a cheat sheet, I don't write it out, which I probably should, but- Other  
1336 things that changed is time that I commit to the classes. I feel like  
1337 they've gotten more challenging over time. I kinda get a gauge of, uh,  
1338 how hard the exam will be, then I'll- I gauge how much time I put into it.  
1339 Or yeah, like how good I understand the information in that segment of  
1340 the exam-

1341

1342 Interviewer:

1343 Mm-hmm (affirmative).

1344

1345 Student:

1346 Okay, well maybe I need to spend more time on this exam. So like I  
1347 have three exams next week.

1348

1349 Interviewer:

1350 Ooh-

1351

1352 Student:

1353 I'm gauging in my head like- I feel like being an engineer's made me like  
1354 a big time planner and like I gotta plan out like every day so I don't  
1355 forget anything, so like I already know that, you know, for my exam  
1356 Monday, I'm gonna be spending probably three hours Saturday, three  
1357 hours Sunday on that exam. Then my exam Wednesday, I got Monday,  
1358 Tuesday lined out. Then I have an exam Thursday. That'll be Tuesday,  
1359 Wednesday. So there's two days where I need to, you know, use my time  
1360 and schedule things out.

1361

1362 Interviewer:

1363 Good luck next week.

1364

1365 Student:  
1366 Yeah, totally. And four homework assignments.  
1367  
1368 Interviewer:  
1369 Good luck.  
1370  
1371 Student:  
1372 Yeah, it's gonna be stressful.  
1373  
1374 Interviewer:  
1375 In general, how much effort do you feel like you put into your classes?  
1376  
1377 Student:  
1378 A lot.  
1379  
1380 Interviewer:  
1381 Okay. Um, why do you quantify it as a lot?  
1382  
1383 Student:  
1384 How much time-  
1385  
1386 Interviewer:  
1387 Mm-hmm (affirmative).  
1388  
1389 Student:  
1390 Those classes? I- how much time I use- of my own time I use on those  
1391 classes?  
1392  
1393 Interviewer:  
1394 Mm-hmm (affirmative).  
1395

1396 Student:

1397 I guess I use that as like my effort, um, and I feel like especially since  
1398 I've gotten- gotten to [current university] that like it's a lot more of my  
1399 time.

1400

1401 Interviewer:

1402 How do you feel about the fact that it has become more of your time  
1403 since you got here?

1404

1405 Student:

1406 It's more stressful for sure. Um, I- like I said, I think it made me- it's  
1407 made me a planner, because I have, you know, less free time. Like I  
1408 gotta make sure that, you know, there's so many things due on so many  
1409 days that you don't wanna forget anything. Um, I dunno. It's- it's  
1410 definitely stressful, for sure, knowing that like you have to plan so many  
1411 things out, like so many different things out, I guess. That's probably  
1412 what the- the number one thing is that like, you know, if you have five  
1413 classes and, you know, five of them are asking, you know, they have,  
1414 you know, this done every week and you gotta stay on top of, you know,  
1415 when it's due, when you're gonna put your time into it, uh, what you  
1416 don't understand about it. Uh, just probably- yeah, probably that. I  
1417 dunno.

1418

1419 Interviewer:

1420 Okay. So do you feel like you learn more from a class that you put more  
1421 effort into?

1422

1423 Student:

1424 Hmm. Yeah. Yeah. 'Cause I-

1425

1426 Interviewer:

1427 Okay.

1428

1429 Student:

1430 I guess if I put more effort into it, then I'm putting more time into it. So

1431 I'll probably- yeah, I'll learn more. Yeah, I'd say that I'd say so.

1432

1433 Interviewer:

1434 Okay. Do you feel like you've put in more or less time compared to your  
1435 peers?

1436

1437 Student:

1438 I'd say- I'd say a little more, or the same. Especially since my roommates  
1439 are all engineers, I kinda get to- to see how much time they put on  
1440 things. And I'd say it's the same or a little more, honestly.

1441

1442 Interviewer:

1443 All right. So you kind of gauge that based off of your roommates?

1444

1445 Student:

1446 Yeah, that question in particular, yeah. Since I'm around them the most  
1447 and I get to see how much time they put into things, it's probably the  
1448 best way I could gauge that.

1449

1450 Interviewer:

1451 Okay. So about the same, maybe more?

1452

1453 Student:

1454 Yeah.

1455

1456 Interviewer:

1457 Now tell me- think about a subject or a class or something where you

1458 had to put in a lot of effort to succeed. Like you did succeed, but you  
1459 had to work your butt off to do so. And tell me about it.

1460

1461 Student:

1462 There was- it asked a lot.

1463

1464 Interviewer:

1465 Mm-hmm (affirmative).

1466

1467 Student:

1468 So like you were doing a lot out of the classroom. But I also had a very  
1469 good professor. I feel like- like I- he asked a lot, but he gave a lot as  
1470 well. I feel like it mattered- it really mattered to him that you succeeded  
1471 and he showed that and he took it upon himself when he saw that there  
1472 was a bad average, you know, he coordinated to his teaching. He's go- or  
1473 like I think one time he even said that, you know, "You guys are all  
1474 engineers and there should be, you know, on average, you guys are  
1475 supposed to be smart. And if you guys are all doing this bad, then it- it  
1476 can't be all your fault." And I was like, you know what? That made  
1477 sense to me. But, uh, exams were very challenging. Uh, but he prepared  
1478 us for it really well, like he made the homework coordinate to challenges  
1479 that the exam would- would have. You know, the exam was harder than  
1480 the homework, but like if you could grasp everything that he was  
1481 throwing at you in the homework, then you were going to be successful.  
1482 But you were gonna have to earn it because it took time, for sure.

1483

1484 Interviewer:

1485 So you felt like he gave you a lot of work to do and a lot of- you needed  
1486 to put a lot of effort in, but the- the stuff leading up to it was actually  
1487 very well preparatory for-

1488

1489 Student:

1490 Yes, he was very well prepared. And yeah, just I feel like he gave you  
1491 all the tools you needed to succeed, but all the tools also to make it like  
1492 challenging. Like he- he challenged you, but he gave to the tools to  
1493 succ- like make that challenge doable.

1494

1495 Interviewer:

1496 Okay.

1497

1498 Student:

1499 And he- I felt like he took it like on- he's a more personal professor. And  
1500 he's just very well organized, prepared, and he just- he- he- I feel like if  
1501 you gave in the effort in that class, then, you know, you're gonna learn  
1502 the material and he gives you the opportunity to, you know, do very- to  
1503 do well. But you're not gonna just get it. You have to earn it.

1504

1505 Interviewer:

1506 Okay. So- so it was a class where you did have to put in a lot of effort,  
1507 but if you did put that effort in, you were almost guaranteed to succeed?

1508

1509 Student:

1510 Not guaranteed-

1511

1512 Interviewer:

1513 Well-

1514

1515 Student:

1516 Well, to-

1517

1518 Interviewer:

1519 From the effort, but-

1520  
1521 Student:  
1522 From the- yeah, yeah. I mean, yeah, if you put in- if you put in the  
1523 effort, maybe not an A, but you- you should definitely get a B if you put  
1524 the effort in. And, you know, yeah, put in a good effort in that class, you  
1525 woulda got a B.  
1526  
1527 Interviewer:  
1528 Okay. How did you feel about that class?  
1529  
1530 Student:  
1531 Um, I feel like it did ask a lot of time, sometimes it was extensive, like  
1532 the homework, you know, the homework was due every class period.  
1533 Um, so that sucked. But I think the most I reflect from that class was the  
1534 professor. Um, in terms of all the professors I had, he was probably the  
1535 best one I ever had. So I didn't mind it in that case. So I knew the- you  
1536 know, reflecting kinda like on the time I put into it, how challenging it  
1537 was, how good of a professor it was, I didn't- I didn't mind it.  
1538  
1539 Interviewer:  
1540 So you'd say it kinda sucked, but it was worth it?  
1541  
1542 Student:  
1543 Yeah.  
1544  
1545 Interviewer:  
1546 Okay. What did you get out of that experience?  
1547  
1548 Student:  
1549 I remember he said like- on like one of the first days of class, he said  
1550 that, like you might never, ever use this class, but, um, you'll learn, like

1551 pro- how to problem solve. You know? You just take how you prep for  
1552 things in his class and take it to other classes, take it to the workplace.  
1553 And I feel like it- it- it made me a better problem solver.

1554

1555 Interviewer:

1556 So you feel like maybe not the subject matter so much as just life skills  
1557 that you learned in that class are what you took from it?

1558

1559 Student:

1560 Probably, yeah. Or school skills, life skills, yeah. Probably those two  
1561 things. Like it definitely prepared me for what other engineering classes  
1562 were gonna be like, and especially having- I mean, him being a very  
1563 good professor made it better, but I feel like I took things I learned there  
1564 to a class where I didn't feel like the professor was that good or was hard  
1565 to understand or he didn't- wasn't very prepared. And it made- that kinda  
1566 was like the setting or like the stepping stone, like, of how I can learn in  
1567 other classes, given the, um- the professor not giving you the  
1568 opportunities to, you know, be the best that you can in that class, I guess.

1569

1570 Interviewer:

1571 Okay. If you had the opportunity to take a class kinda like that one,  
1572 would you do it again?

1573

1574 Student:

1575 In terms of the professor or in terms of the class?

1576

1577 Interviewer:

1578 Um, think the professor and the environment are gonna be just the same,  
1579 but the- it would be a different subject.

1580

1581 Student:



1582 Yeah, I'd take that again. 100%.

1583

1584 Interviewer:

1585 Okay.

1586

1587 Student:

1588 If I could have that professor every class, I feel like I'd be the best like

1589 engin- if I could have those qualities in a professor in every professor,

1590 then I feel like I'd be, you know, the most successful I could.

1591

1592 Interviewer:

1593 So that's just the kind of professor you feel like should be everywhere?

1594

1595 Student:

1596 Maybe not to that high of degree-

1597

1598 Interviewer:

1599 (laughs)-

1600

1601 Student:

1602 But it sh- at least shooting for it. At least, you know, wanting you to be

1603 as successful as you can. You know, not everybody's gonna be, you

1604 know, that prepared or, you know, you know, the level of the professors

1605 are different, but if you're showing that you wanna, as a student, to

1606 succeed, and you're giving them opportunities to, you know, ask

1607 questions and you're finding where you were maybe flawed as a

1608 professor, what- what's not working, I feel like you're trying to be a

1609 better professor and you care about what the students, their grades are,

1610 then I think those like kinda work hand in hand of the experience you

1611 get in the class.

1612

1613 Interviewer:  
1614 Okay. Now think about a class or a subject or something that you just  
1615 sort of scooted by, you didn't need to put much effort in at all to succeed.  
1616 Tell me about that.  
1617  
1618 Student:  
1619 I didn't need much effort to succeed?  
1620  
1621 Interviewer:  
1622 Yeah. Very little effort.  
1623  
1624 Student:  
1625 Um, show up?  
1626  
1627 Interviewer:  
1628 (laughs)-  
1629  
1630 Student:  
1631 Was essentially what-  
1632  
1633 Interviewer:  
1634 The ar- the architectural- excuse me- appreciation. Sorry.  
1635  
1636 Student:  
1637 Yeah, that's kinda first one that comes to mind. Um, yeah. I mean, I can't  
1638 say he was even a bad professor, 'cause he kinda grabbed- he- that  
1639 professor for that class, like he really liked the material and you can tell  
1640 he's been doing it for a long time, so I kinda thought it was interesting  
1641 over time. But I didn't need to know it, so like again I just kinda showed  
1642 up. Um, for an engineering class, that didn't- yeah, there was- there was  
1643 one where I just- I just feel like it was a waste of time. Like there was

1644 one class in particular where I felt like the material was really important,  
1645 'cause it actually related to my internship I had the following summer.

1646

1647 Interviewer:

1648 Mm-hmm (affirmative).

1649

1650 Student:

1651 So I'm like, wow, this- this thing- this is important. But he was just poor  
1652 at relating it and I feel like the class was so easy that like you didn't try  
1653 to learn it, like- and I just- I just feel like it was a waste of time. Time  
1654 and money, at that point.

1655

1656 Interviewer:

1657 Okay. Did you get anything out of that experience?

1658

1659 Student:

1660 No. No. A good grade. That's about it. GPA booster class is what I feel  
1661 like it was.

1662

1663 Interviewer:

1664 Is that the kind of thing where you'd only step foot in there if you had  
1665 to?

1666

1667 Student:

1668 For that professor and that setting, yes.

1669

1670 Interviewer:

1671 Okay.

1672

1673 Student:

1674 Yeah.

1675  
1676 Interviewer:  
1677 What about the appreciation of architecture, you said that the professor  
1678 of that one was actually very good. Di-did you feel like that one was as  
1679 much of a waste?  
1680  
1681 Student:  
1682 I feel like that'd been a hobby class I would've taken. Like, I don't know.  
1683 I think it was a waste because I didn't need it, but I at least showed up  
1684 and I was like, "This is kind of interesting."  
1685  
1686 Interviewer:  
1687 Okay. So you at least got some entertainment value out of it almost?  
1688  
1689 Student:  
1690 Yeah, I'd say that. Yeah.  
1691  
1692 Interviewer:  
1693 And so- I mean, did you get anything out of that besides the  
1694 entertainment and GPA?  
1695  
1696 Student:  
1697 Probably not.  
1698  
1699 Interviewer:  
1700 Not even some appreciation for architecture? (laughs)-  
1701  
1702 Student:  
1703 I had- probably not. (laughs)-  
1704  
1705 Interviewer:

1706 All right. Now think about a student you know who puts in a lot of effort  
1707 to succeed. You know that they get good grades, but every time you see  
1708 them, they're working their butt off, can't go out with you this weekend  
1709 'cause I need to do my studying, stuff like that. What does that tell you  
1710 about how smart they are?

1711

1712 Student:

1713 Like that- that they- they're always busy?

1714

1715 Interviewer:

1716 That they're always studying and like they're-

1717

1718 Student:

1719 Do I know they're smart?

1720

1721 Interviewer:

1722 You know that they are doing very well. You're- this is- how do you

1723 judge their smartness? You know that they're getting As, but you also

1724 know that they're studying full time, all the time.

1725

1726 Student:

1727 I'd probably relate the two.

1728

1729 Interviewer:

1730 Okay. But what would you come up with? How smart do you think they

1731 are?

1732

1733 Student:

1734 If they put in a lot of time and especially like more time than I do-

1735

1736 Interviewer:

1737 Mm-hmm (affirmative).  
1738  
1739 Student:  
1740 Then I probably- I'd probably relate that if they put that much time in,  
1741 that- you know, that it kinda relates to the grade they're getting.  
1742  
1743 Interviewer:  
1744 Yeah, you know that they're getting an A.  
1745  
1746 Student:  
1747 I know that they're getting an A?  
1748  
1749 Interviewer:  
1750 Yeah. How smart do you think they are?  
1751  
1752 Student:  
1753 If they're getting an A and they're putting time in there?  
1754  
1755 Interviewer:  
1756 Mm-hmm (affirmative).  
1757  
1758 Student:  
1759 Oh-  
1760  
1761 Interviewer:  
1762 (laughs)-  
1763  
1764 Student:  
1765 I- they're extremely smart and extremely driven.  
1766  
1767 Interviewer:

1768     Okay.  
1769  
1770     Student:  
1771     Yeah.  
1772  
1773     Interviewer:  
1774     Um, what other qualities do you think that might- person might have?  
1775  
1776     Student:  
1777     Time management. Um- Uh, I can't- nothing's coming to mind. Um,  
1778     other qualities that they would have? I don't know, maybe school-driven  
1779     is a word or they're-  
1780  
1781     Interviewer:  
1782     Sure.  
1783  
1784     Student:  
1785     You know, it means a lot to them.  
1786  
1787     Interviewer:  
1788     Okay.  
1789  
1790     Student:  
1791     Shows that- you know, that their- their grade means a lot to them.  
1792  
1793     Interviewer:  
1794     So it tells you where their values lie.  
1795  
1796     Student:  
1797     Yeah. Yeah.  
1798

1799 Interviewer:  
1800 Okay. Now what about a student who you barely ever see them studying  
1801 but they're still getting an A? How- what does that tell you about how  
1802 smart they are?  
1803  
1804 Student:  
1805 They're probably smarter than the other person, in my opinion. Just off  
1806 of those two things.  
1807  
1808 Interviewer:  
1809 Okay.  
1810  
1811 Student:  
1812 Probably comes easier to them. Um, yeah, if it's just on like average,  
1813 maybe it's not certainly class material, but it's on average, they're  
1814 probably a smarter person.  
1815  
1816 Interviewer:  
1817 Okay.  
1818  
1819 Student:  
1820 School-wise.  
1821  
1822 Interviewer:  
1823 And I'm guessing you might not think the same if they weren't actually  
1824 getting an A?  
1825  
1826 Student:  
1827 No.  
1828  
1829 Interviewer:



1830 Okay.

1831

1832 Student:

1833 Like I'd probably say that, you know, not a lot of effort and getting good  
1834 grades probably means that they're- they're very smart. Maybe they're  
1835 not as driven. Um, and then if they use a lot of effort and they're getting  
1836 the As, they're not as smart as that person but they're- they're definitely  
1837 driven. And then the- the bottom one probably is no effort, bad grade,  
1838 you know, kinda on that scale.

1839

1840 Interviewer:

1841 Okay. So now tell me about a specific time when you received feedback  
1842 that you were not performing to expectation. It might be school or job or  
1843 a relationship or something, but just you weren't up to par and you were  
1844 told this. Tell me about it.

1845

1846 Student:

1847 The first time, you said?

1848

1849 Interviewer:

1850 Just a specific time. Any-

1851

1852 Student:

1853 Oh, a specific time. Ooh, okay. I was digging into the history bank there.

1854

1855 Interviewer:

1856 (laughs)-

1857

1858 Student:

1859 Uh-

1860

1861 Interviewer:  
1862 I don't really care what the first time is.  
1863  
1864 Student:  
1865 Yeah.  
1866  
1867 Interviewer:  
1868 It was probably when you were really little and you're just like- and your  
1869 parents are just like, "No, you need to put your toys in the toy box"!  
1870  
1871 Student:  
1872 I was thinking about things like in high school, I was like, oh man, I  
1873 dunno. Um-  
1874  
1875 Interviewer:  
1876 It doesn't have to be the earliest, just-  
1877  
1878 Student:  
1879 Okay.  
1880  
1881 Interviewer:  
1882 A time.  
1883  
1884 Student:  
1885 Okay.  
1886  
1887 Student:  
1888 That- okay, can you say the question again?  
1889  
1890 Interviewer:  
1891 Tell me about a time- a specific time when you received feedback that

1892 you were not performing to expectation?  
1893  
1894 Student:  
1895 My fi- my physics one test, my first one.  
1896  
1897 Interviewer:  
1898 Okay.  
1899  
1900 Student:  
1901 When I got a bad grade.  
1902  
1903 Interviewer:  
1904 So how did you respond to getting that bad grade?  
1905  
1906 Student:  
1907 Something's gotta change. Um, you know, study habit- I- I gotta change  
1908 as a student, that- of that class.  
1909  
1910 Interviewer:  
1911 Okay.  
1912  
1913 Student:  
1914 I gotta change my ways. I gotta change how I am in the classroom, time  
1915 I- time I spend out of the classroom, to improve.  
1916  
1917 Interviewer:  
1918 All right. So you'd change your studying habits, basically?  
1919  
1920 Student:  
1921 I- yeah, I changed studying, note taking, uh, yeah. All that.  
1922

1923 Interviewer:  
1924 Okay. What was the outcome of these changes you made?  
1925  
1926 Student:  
1927 Next exam was better.  
1928  
1929 Interviewer:  
1930 Okay.  
1931  
1932 Student:  
1933 Um, I think I just- I think I improved as a- as a student. That was  
1934 definitely my most difficult class up to that point in my academic career.  
1935  
1936 Interviewer:  
1937 Mm-hmm (affirmative).  
1938  
1939 Student:  
1940 And yeah, I think I just- I think it helped me. I think that helped me  
1941 become a better student, for sure.  
1942  
1943 Interviewer:  
1944 Did you learn anything from that experience?  
1945  
1946 Student:  
1947 W-what I was doing wrong, I guess.  
1948  
1949 Interviewer:  
1950 Okay.  
1951  
1952 Student:  
1953 Um, I knew what I was doing was wrong. I didn't know what would be-

1954 be right by any means, but I knew I had to change at least what I was  
1955 doing and hope that brings it up at least. And I think- I think that was  
1956 probably honestly good for me in the long run.

1957

1958 Interviewer:

1959 Do you think you succeeded at sort of responding appropriately to the  
1960 bad grade?

1961

1962 Student:

1963 Yeah. Like the bad grade definitely brought me down, you know, you  
1964 hit that- you know, for a while you're like, wow, you know, I definitely  
1965 failed. But, uh, you know, it- I'm a person who tries to like, you learn the  
1966 most when you fail, so-

1967

1968 Interviewer:

1969 Mm-hmm (affirmative).

1970

1971 Student:

1972 I try to- you know, what- what do I gotta change or what can I learn  
1973 from this experience? And, you know, just- and then also when I got that  
1974 bad grade, I'm thinking like, how's it going to affect me, my total grade  
1975 in the class? So, you know, I gotta do even better on the other- the other  
1976 stuff. And- So yeah, I feel like I learned a lot from that.

1977

1978 Interviewer:

1979 Okay. What would you- what would you say to a student who asked you  
1980 for advice because they're struggling with a similar situation?

1981

1982 Student:

1983 I'd ask them how they're preparing. I'd ask them what their- um, what  
1984 their re- regime was for going to class. How are you note taking? How

1985 are you studying? How are do you do your homework? Especially if I've  
1986 taken that class before or that professor before, I kinda knew what to  
1987 expect. And then I'd- I'd, uh, offer them advice about what I did to  
1988 change and hope that helps them, even though not everybody's the same,  
1989 but, you know, maybe that could lead them down the right path. Or  
1990 kinda just share my experience with them, you know, what I did to kinda  
1991 change things.

1992

1993 Interviewer:

1994 Okay. Do you care if your peers judge you when you do poorly?

1995

1996 Student:

1997 Uh, I guess I- I don't like them thinking they're better than me, maybe.

1998

1999 Interviewer:

2000 Mm-hmm (affirmative).

2001

2002 Student:

2003 But besides that, I don't think I really care. I think it's back to that  
2004 competitive thing, especially if they're in the same class and they did  
2005 better than me, you know, on the exam or something, then probably just  
2006 back to that question, how to deal with that in terms of, you know, I  
2007 don't wanna- I don't wanna not be better than them but do better than  
2008 them.

2009

2010 Interviewer:

2011 Okay. So that- that thing about thinking that they're better than you, why  
2012 would that bother you?

2013

2014 Student:

2015 'Cause it- I'd probably feel like they think they're smarter than me based

2016 off that grade.  
2017  
2018 Interviewer:  
2019 Okay. And that was just sort of a bad feeling in general then?  
2020  
2021 Student:  
2022 Yeah. I mean, I just- just don't like that.  
2023  
2024 Interviewer:  
2025 Okay. What about your professors? Do you care if they judge you when  
2026 you do poorly?  
2027  
2028 Student:  
2029 Depends on the p- depends on the situation probably, if it- um, yeah, I  
2030 feel like since being here, they don't really care if you do poorly. They  
2031 probably ca- they, as an individual, they probably don't care if you did  
2032 poorly, but I- they want the class, you know, average to be at least  
2033 decent.  
2034  
2035 Interviewer:  
2036 Okay.  
2037  
2038 Student:  
2039 So if like you're falling off and they're like, all right, you need to get  
2040 yourself together, like, you know, catch up.  
2041  
2042 Interviewer:  
2043 Okay. What about in a smaller classroom, where the professor's more  
2044 personal? Would you care more then?  
2045  
2046 Student:

2047 Yeah. Probably.  
2048  
2049 Interviewer:  
2050 Okay. Why would their judgment of you matter?  
2051  
2052 Student:  
2053 I dunno if that- just if they're personal with you, then you're not trying to  
2054 impress them, but- especially if it's a good personal relationship, then  
2055 obviously they're- they're [inaudible 01:06:20] professor, I'd, you know,  
2056 put some effort. Then I feel like they want you to succeed as a-  
2057 personally, not just like in a big classroom where they just want the class  
2058 to succeed. You know, if- if they want me to succeed personally, um,  
2059 then I just kinda like wanna, you know, not live up to it but, uh, just  
2060 show that, you know, their time commitment, you know, that they're  
2061 doing- that- and they're using their time good, that they're- they're  
2062 investing to me is worth it.  
2063  
2064 Interviewer:  
2065 Okay. So you just kinda want to prove yourself?  
2066  
2067 Student:  
2068 Yeah.  
2069  
2070 Interviewer:  
2071 All right. Do you think you learn more from a- an experience that's  
2072 challenging or not very challenging?  
2073  
2074 Student:  
2075 More challenging. Yeah.  
2076  
2077 Interviewer:



2078 Okay. Does it matter if you succeed during the experience?  
2079  
2080 Student:  
2081 No.  
2082  
2083 Interviewer:  
2084 Okay.  
2085  
2086 Student:  
2087 Well in terms of learning?  
2088  
2089 Interviewer:  
2090 Mm-hmm (affirmative).  
2091  
2092 Student:  
2093 No, I don't think it- I think it- usually you get something out of it, for  
2094 sure. Out of a challenge. I think you- if it's challenging and you  
2095 succeeded, um, then you- you know, you learned how to conquer that,  
2096 even if you fail, I think, you take- you can take something from that.  
2097 You- you learn something in the long run.  
2098  
2099 Interviewer:  
2100 So just based on earlier answers, could I surmise you might care if there  
2101 is a grade on it, but as long as the main objective is just to learn, you- it  
2102 doesn't matter if you did the thing, as long as you learned about it?  
2103  
2104 Student:  
2105 It changes if there's a grade.  
2106  
2107 Interviewer:  
2108 Yeah, that's what I was saying. It- it would change if there's a grade, but

2109 if there wasn't a grade, you were just trying to learn something? Then  
2110 you don't really care whether you succeed, as long as you learned?

2111

2112 Student:

2113 Yeah. Okay, yes. For sure. Yeah. I see how you word that. Yeah, if there  
2114 was no grade and as long as I learned and even if I wasn't good at it,  
2115 then I'd probably wouldn't even mind doing it over again or something  
2116 to make sure I succeeded. But if I learned something from it, then for  
2117 sure, I- I- that's- you'd get something from that.

2118

2119 Interviewer:

2120 Okay. So now that we've talked through all these different ideas- sorry,  
2121 my voice is kinda going today. I don't know why. Now that we've talked  
2122 through all these different ideas related to motivation, effort, and  
2123 challenges, how would you summarize what you've shared with me?

2124

2125 Student:

2126 Where you put your time, how you use your time, if you're- has a- at  
2127 least a good correlation to how successful you are, but- not but, and then  
2128 also your grade vastly affects how you feel as a student or how it- it's-  
2129 how successful you are, whether- I think a grade affects how you feel  
2130 about yourself more than what you learned. If that makes sense.

2131

2132 Interviewer:

2133 Okay. Sure. Did you gain any insights from our discussion?

2134

2135 Student:

2136 I'd say so. I'd say so... It made me think more of what a grade means-

2137

2138 Interviewer:

2139 Mm-hmm (affirmative).

2140  
2141 Student:  
2142 To me. And, um, how I correlate time to, um, my success or my failure.  
2143  
2144 Interviewer:  
2145 Mm-hmm (affirmative).  
2146  
2147 Student:  
2148 Um, I'd say those are probably the top two things I took from this, for  
2149 sure.  
2150  
2151 Interviewer:  
2152 All right. Do you think it was worth your time?  
2153  
2154 Student:  
2155 Yeah. I think so.  
2156  
2157 Interviewer:  
2158 Neat. Is there anything else you'd like to share with me?  
2159  
2160 Student:  
2161 Um, I think I covered all the- the grade things, making me think about  
2162 that more, but I think I covered it.  
2163  
2164 Interviewer:  
2165 All right.  
2166  
2167 Student:  
2168 Yeah, I think I'm good.  
2169

2170 Interviewer:

2171 Thank you very much.

1     **Interview Transcript 19: Steve**

2     Interviewer: Allison Adams

3     Date Interview conducted: 04/26/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     ...and Steve, you decided upon. Our goal today is for us to have a  
8     detailed discussion about your beliefs about or perceptions of the nature  
9     of your own intelligence. The discussion will inform my understanding  
10    of the perceptions of engineering students and will help future decisions  
11    about the undergraduate engineering experience and how it can be  
12    improved for all students.

13

14    Student:

15    Mm-hmm (affirmative).

16

17    Interviewer:

18    I want to hear your own thoughts and perceptions. I'm expecting that  
19    they will be different from the thoughts of others. There's no right or  
20    wrong answers. I just want to know what you think. I aim to understand  
21    your perspective, so I'll be asking questions like what do you mean by  
22    that, or can you elaborate? These questions can end up being a bit  
23    awkward and, because they require you to really reflect on your  
24    experiences. So I'll leave you a long pause to consider it and take your  
25    time. If you need clarification, let me know.

26

27    Student:

28    All right.

29

30    Interviewer:

31    Any questions?

32

33 Student:

34 Not really.

35

36 Interviewer:

37 All right. Tell me about yourself as a student.

38

39 Student:

40 Um, I would say I'm an average student. I'm a much better student now  
41 than I was my freshman and sophomore year of college. Um, I think  
42 mainly because the coursework now is a little more interesting than just  
43 calculus and physics. Um, and also I just, I put a lot more effort into it  
44 now than I did then, so I feel like I matured a little bit since then. But,  
45 um, yeah I would say I'm an average student. I'm a B level student for  
46 the most part, so, um, I'm by no means a academic all-star. But I feel  
47 like I put quite a bit of effort into my school, make sure I go to class and  
48 do my assignments and stuff, so.

49

50 Interviewer:

51 All right. So... What does it mean to you to be an average student?

52

53 Student:

54 I guess in the most literal sense of the word, I mean my GPA's about a  
55 3.0 which I think is pretty average in the grand scheme of things. Um.  
56 And I mean just from like the student, like my friends and other  
57 classmates, I know that some of them are better students than me, than  
58 me. Like they care, I guess care's not the right word but they put a lot  
59 more effort into school and school is their primary foc- focus. Whereas I  
60 have, you know, I work quite a bit and have other things going on in my  
61 life so I can't do it 100% of my time in school like some of my friends  
62 can. But at the same time, I think I, I come to class every day and I do

63 homework and study for tests. So I am putting more than the minimum  
64 required amount of effort in. So I think that, I don't know.

65

66 Interviewer:

67 Okay. So you mentioned, uh, more interesting than calculus and physics  
68 I think it was.

69

70 Student:

71 Mm-hmm (affirmative).

72

73 Interviewer:

74 Could you go into that a bit more?

75

76 Student:

77 Yeah. And I guess physics, mainly calculus. I was not a good calculus  
78 student 'cause I didn't enjoy it for the most part. So, um, I probably  
79 didn't study as much as I should've, devote enough time to it. But  
80 physics is interesting. Like right now I just got out of [design class] and  
81 I really like that class 'cause it's interesting to me and [thermodynamics  
82 courses] and those types of classes are more interesting to me 'cause I  
83 can see where they're directly applicable toward what we do. So I don't  
84 know if that really answers your question. (laughs)

85

86 Interviewer:

87 Good. I, I think it does. S- Also you me- you kind of compared yourself  
88 for a minute there to what you were like as a sophomore, freshman  
89 student.

90

91 Student:

92 Mm-hmm (affirmative).

93

94 Interviewer:

95 Could you elaborate on that?

96

97 Student:

98 Well I think, like freshman year I just wasn't as good of a student. I  
99 didn't spend as much time doing, I skipped a lot of homework 'cause I  
100 was like ah this is easy. I can figure this out later before the test. And I  
101 would just put things off and, but all of a sudden everything was kind of  
102 piled up and I was too far behind to really like, be able to grasp the  
103 conc- or grasp the course material, uh, at the level I needed to really  
104 succeed in the class. So I mean I got out with C's in all my classes but I  
105 definitely think I could've learned more if I had ... If I did it over again  
106 now I would have a lot better core concept understanding of like  
107 [calculus courses] which would probably have made my life a little  
108 easier in the next year or so.

109

110 Interviewer:

111 Okay. You mentioned both the grades and the learning there. Are you  
112 kind of equating them to the same thing or?

113

114 Student:

115 No. And that's like, [calculus course] especially I think is a good  
116 example where I got a C in that class but I don't think I could tell you a  
117 single thing that I learned. So that's, so there is a little bit of a disconnect  
118 there because I think honestly I probably should have had to retake some  
119 of those. But I got out with a C so I'm not going to.

120

121 Interviewer:

122 (laughs)

123

124 Student:



125 And I've made it this far being able not to. So... And I don't know. I  
126 think, but like in [design class] and thermo especially, like I feel like I  
127 have a pretty good concept of the material in that class and I feel like I  
128 am pretty confident in my abilities in that. And like, right now I have B's  
129 in both classes I think, or high B's. So I mean even if I got a B or s- like  
130 I did really bad on a test or something and I drop my grade, I think I  
131 wouldn't necessarily feel as bad about that because I still feel like I know  
132 what I'm doing in that class. 'Cause I know that they aren't the same  
133 thing, so. I don't know. I don't know. (laughs)

134

135 Interviewer:

136 Okay.

137

138 Student:

139 Sorry.

140

141 Interviewer:

142 Let's say hypothetically you're in a class and you get an exam back from  
143 the professor. So hypothetically again, let's say you get your exam back,  
144 look it over and feel like you succeeded on it. How do you react and  
145 why?

146

147 Student:

148 Um. Well I feel like my immediate reaction is just a sense of  
149 accomplishment, like yes. Like, I studied for this test, I was nervous  
150 about it and put a lot of effort into it and at the, and I got the end result  
151 that I wanted. That's a good feeling. That's a, it's a prime example of  
152 positive reinforcement I think. Um. What else... I don't know. It also just  
153 kind of reaffirms my, kind of self confidence like yeah this is what I  
154 need to be doing. I'm in the right spot, so.

155

156 Interviewer:  
157 Okay so not only that you can do something but you're where you're  
158 meant to be sort of.  
159  
160 Student:  
161 Yeah.  
162  
163 Interviewer:  
164 Okay. So what do you consider to be success on an exam?  
165  
166 Student:  
167 For like engineering courses, if I'm B or above I'm happy, usually.  
168  
169 Interviewer:  
170 Okay. What about other courses?  
171  
172 Student:  
173 If it's, like I'm in [business course] and right now and if I get a B in that  
174 on a test in there I'm a little disappointed 'cause I think those, those tests  
175 usually aren't as challenging. I don't know.  
176  
177 Interviewer:  
178 Okay.  
179  
180 Student:  
181 That class isn't designed to be as challenging, so.  
182  
183 Interviewer:  
184 So you base it on the grade but the grade that you set the bar at kind of  
185 depends on your perceived challenge level?  
186

187 Student:

188 Yeah.

189

190 Interviewer:

191 Okay.

192

193 Student:

194 And part of that is I mean, that class for example, the, the teacher has

195 explicitly said like this is not meant to be a challenging course. You

196 guys just need to put in the, show up to class, do the homework and like

197 put in the base, basic amount of effort and study just a little bit for the

198 tests. My tests aren't challenging. So like, going into that like that class

199 knowing that the tests aren't designed to be really challenging, if I were

200 to get a little bit lower grade on that I'd be a little more disappointed, just

201 'cause it's, it's not designed to be a stumper like other classes are.

202

203 Interviewer:

204 Okay.

205

206 Student:

207 It just 'cause I, that's what that teacher's philosophy is. Whereas I know

208 other professors tend to be a little more challenging on their tests, so.

209

210 Interviewer:

211 Right. So it's really just dependent on how hard it's likely to be.

212

213 Student:

214 Yeah.

215

216 Interviewer:

217 Okay. What would you do if you happened to see the score of the person

218 next to you and you think of the person next to you is smarter than you  
219 are, but you did better than they did on the exam? How do you react?  
220  
221 Student:  
222 I mean, I can't help but feel a little bit, a little bit of like wow I did better  
223 than them. That's impressive. Wow, I thought they would've done better  
224 than that, or something. So which is, I guess that's a little envious but it-  
225  
226 Interviewer:  
227 Envious? Or-  
228  
229 Student:  
230 No I guess not ... I really don't know what the word-  
231  
232 Interviewer:  
233 Pride?  
234  
235 Student:  
236 Pride.  
237  
238 Interviewer:  
239 (laughs)  
240  
241 Student:  
242 Prideful. Um. A little bit of that and, I don't know. I tend to be, I tend to  
243 not have very high self confidence sometimes, especially academics. So  
244 any time something that, like that happens I'm like oh wow. I really am  
245 doing better than I thought I was or maybe this class isn't as hard, or is  
246 harder than I thought it was. I don't know, so. Um. It's not really an  
247 issue.  
248

249 Interviewer:

250 Right. So it doesn't really change your perspective of that person. Just  
251 makes you feel a little bit better about yourself?

252

253 Student:

254 No I don't think so 'cause I mean, everybody has off test and everyone  
255 is, I mean everyone has subjects or like even specific material in a class  
256 that is harder to them than others. I mean, for example in my [design  
257 class] class, um, the first test was pretty tough. But what the average for  
258 the first test was significantly lower than the average for the second test  
259 and I did better on the first test. Just and not even really, there wasn't  
260 really any difference in my study habits or exam preparations. Just I was  
261 better at the material for the first test. And for whatever reason I  
262 understood it better. So, um, I don't know. I don't, I never think it's like a  
263 personal dig at that person. I mean it's just-

264

265 Interviewer:

266 Sure.

267

268 Student:

269 ... you have off days. Things happen ...

270

271 Interviewer:

272 Would you share with anyone else that you got a good grade on that  
273 exam?

274

275 Student:

276 Uh, not unprompted.

277

278 Interviewer:

279 So it's not necessarily a secret but you're not just going to go tell

280 someone?  
281  
282 Student:  
283 I'm not going to be like, look I got a 100, suck it. But if they're like, if  
284 they're sharing, people are sharing test scores, I might bring it up. But  
285 I'm not going to try and rub it in people's faces or-  
286  
287 Interviewer:  
288 So ba-  
289  
290 Student:  
291 ... advertise the fact that I did better than them.  
292  
293 Interviewer:  
294 So basically if someone else brings the topic up?  
295  
296 Student:  
297 Yeah.  
298  
299 Interviewer:  
300 Okay. Um. Would you share with anyone else that you did sm- better  
301 than the smart person?  
302  
303 Student:  
304 Probably not in that direct context.  
305  
306 Interviewer:  
307 Okay. Now let's hypothetically say instead you don't feel like you  
308 succeeded on that exam.  
309  
310 Student:

311 Yeah.

312

313 Interviewer:

314 How would you react and why?

315

316 Student:

317 My immediate reaction is just to figure out what I did wrong. Like what

318 did I, what mistakes did I make? Was it a, just like copying something

319 down wrong, simple algebra mistake or, or was it my understanding was

320 wrong? I misunderstood this, I did this wrong. Um, so my-

321

322 Interviewer:

323 Like little mistakes versus big mistakes?

324

325 Student:

326 Yeah. Like, like I copied a number down wrong or, oh I did this, I

327 misunderstood the problem and got it completely wrong. Or I

328 completely forgot to do something. So my immediate reaction is always

329 to figure out why. Like what did I do wrong? What, I don't know. You

330 can't fix a problem if you don't know what it is, and so-

331

332 Interviewer:

333 Sure.

334

335 Student:

336 ... I address it.

337

338 Interviewer:

339 Why is that where you go kind of first?

340

341 Student:

342 I don't know. It's just my, where I naturally go. I mean ...

343

344 Interviewer:

345 Okay. So how would you react if the other students in the class did

346 much better than you? Like if the teacher had a sort of, this is where the

347 grades' curve was, um.

348

349 Student:

350 Uh, I mean it is kind of a bad feeling 'cause it's like oh man this, I really

351 beefed it on this one, or something. So it still kind of goes back to why.

352 Like, oh that probably means that I didn't study enough for this test or I

353 need to work a little harder in this class, um, take a little better notes or

354 something.

355

356 Student:

357 Um. I don't know.

358

359 Interviewer:

360 Sure.

361

362 Student:

363 I mean one of my, one of my proudest achievements in school was I got

364 a 27 on the first surrogates test and like finished with a B in the class,

365 after like little half the class dropped the class. They had to redo the

366 semester. So that was an example of like failing the actual crap out of a

367 test and then being like, okay this, yeah, I did really bad on this but it's

368 not the end of the world.

369

370 Interviewer:

371 You-

372



373 Student:  
374 I can get this stuff down.  
375  
376 Interviewer:  
377 ... pulled through.  
378  
379 Student:  
380 Yeah. Yeah. I pulled through. Figure out what I'm doing wrong and  
381 adjust.  
382  
383 Interviewer:  
384 Learn.  
385  
386 Student:  
387 Yeah and learn from it.  
388  
389 Interviewer:  
390 Okay. What if you didn't do as well as someone that you consider to be  
391 not as smart as you are?  
392  
393 Student:  
394 I don't know. It's kind of, it might just be that, I mean they have a better  
395 concept of the material or they worked hard for this test. I don't know.  
396  
397 Interviewer:  
398 Okay.  
399  
400 Student:  
401 I don't think, and it depends and the class too. Some classes, the test are  
402 more organic where it's, it's really reliant on your, like theoretical  
403 understanding of the material and some facets it's more did you have the

404 right stuff on your note sheet? And I don't know. Might, might mean that  
405 they just have a better understanding of this material and they have,  
406 they're good at this class. I don't know. But I don't know. I think it,  
407 things like that can be flukey. Might just mean that they had a good day,  
408 I had a bad day. I don't know. (laughs)

409

410 Interviewer:

411 All right.

412

413 Student:

414 Not really sure.

415

416 Interviewer:

417 Would you share with anyone else that you didn't do well?

418

419 Student:

420 Yeah, usually.

421

422 Interviewer:

423 Okay. Who do you usually share with?

424

425 Student:

426 I don't know. The, if I have friends on that class.

427

428 Interviewer:

429 Okay.

430

431 Student:

432 I'm not very shy about my test scores and that, that I don't do, never in a  
433 prideful way, like a show-offy way.

434

435 Interviewer:  
436 Okay. So you're, you're just not like spilling the beans everywhere but  
437 you're not secretive about it either.  
438  
439 Student:  
440 No. No. I think, and I think part of that is if I do that I, I think I'd, I think  
441 I'd be probably want some sympathy sometimes. Like aw, crap, I did  
442 really bad on this test.  
443  
444 Interviewer:  
445 (laughs)  
446  
447 Student:  
448 And they'll be like, ah, it's all right. You'll get it next time, so.  
449  
450 Interviewer:  
451 Fishing for-  
452  
453 Student:  
454 Yeah I think it feels a little bit-  
455  
456 Interviewer:  
457 ... sympathy.  
458  
459 Student:  
460 ... fishing for sympathy.  
461  
462 Interviewer:  
463 (laughs)  
464  
465 Student:

466 So.  
467  
468 Interviewer:  
469 All right. Does it matter to you if your peers think you're smart?  
470  
471 Student:  
472 Um, not really.  
473  
474 Interviewer:  
475 Why not?  
476  
477 Student:  
478 I don't, I don't know. 'Cause I don't think, I think it's important to not  
479 determine your self worth based on other people's opinions of yourself.  
480  
481 Interviewer:  
482 Okay.  
483  
484 Student:  
485 Or views of you. 'Cause like, I don't know.  
486  
487 Interviewer:  
488 You just think your own view of yourself is more important than theirs?  
489  
490 Student:  
491 Yeah. Yeah. I don't know. Like I, I have a class, I mean I have classes  
492 with a lot of people who think they are very, who are very self important  
493 so-  
494  
495 Interviewer:  
496 Mm-hmm (affirmative).

497

498 Student:

499 ... um, I don't know. I think it's, I mean you got to recognize that  
500 everyone's human too. Their opinion of this isn't worth no more than  
501 mine. So I have to let my self determine, or if I determine myself worth  
502 based on the opinions of others than that's just going to lead me down a  
503 bad path, so I don't know.

504

505 Interviewer:

506 Sure. What about your professors? Did they, do you care if they think  
507 you're smart?

508

509 Student:

510 I mean I don't care if they think I'm smart necessarily but I don't want  
511 them to think, oh that kid's lazy. He doesn't try. He doesn't come to  
512 classes. So, I don't know. Um. I'm probably not as engaged with my  
513 professors as some people are. Um. I think I engage with [instructor]  
514 about as much as I do anybody, and that's also a big difference between  
515 the student I was when I was a freshman and sophomore and the student  
516 I am now. Where, um, I'm a lot less afraid to ask questions now and seek  
517 out help if I'm having trouble understanding something now. So I think  
518 that, that ties into kind of the professor's opinion of me as well, as I don't  
519 want them to think I'm ... I want them to know where I'm at. Like I want  
520 them to know that I'm having trouble or when I'm, when I need help and  
521 stuff.

522

523 Interviewer:

524 Okay.

525

526 Student:

527 And I think, and that falls on me to communicate that to them.

528  
529 Interviewer:  
530 So you care less whether they think you're smart and more whether they  
531 have an accurate assessment of you?  
532  
533 Student:  
534 Yeah. Because how are they supposed to teach me if they don't know  
535 where I'm at?  
536  
537 Interviewer:  
538 All right. So you said-  
539  
540 Student:  
541 And, and that's not-  
542  
543 Interviewer:  
544 Yeah.  
545  
546 Student:  
547 That's not necessarily their, I mean in a class, if they have, if they're  
548 teaching a lecture hall full of 90 people-  
549  
550 Interviewer:  
551 Mm-hmm (affirmative).  
552  
553 Student:  
554 ... they can't keep track of all those people.  
555  
556 Interviewer:  
557 Sure.  
558

559 Student:

560 So it ultimately falls on the student to like-

561

562 Interviewer:

563 Communicate.

564

565 Student:

566 ... communicate and put in that effort to make sure we're on the same

567 page. So I don't know. But that just kind of ties in like, I want the

568 professors to know that I'm putting in effort, that I'm trying, that I am

569 doing my best, that I am taking their class seriously. Not just sitting in

570 the back on my phone all hour, so.

571

572 Interviewer:

573 Okay. You mentioned a word and that just kind of made me curious.

574 What do you consider worse? If someone thought you were dumb or s-

575 someone thought you were lazy?

576

577 Student:

578 Lazy.

579

580 Interviewer:

581 Why do you say that?

582

583 Student:

584 I don't know. 'Cause you, I don't know. 'Cause intelligence is, I think is

585 sort of an inherent trait and-

586

587 Interviewer:

588 Okay.

589

590 Student:  
591 ... Sometimes you can't really change. But you can always work hard.  
592 Like there's not really an excuse for being lazy in life, so.  
593  
594 Interviewer:  
595 Okay.  
596  
597 Student:  
598 At least in aspects that matter, like in work and school and stuff.  
599  
600 Interviewer:  
601 Right. Uh, no one's going to blame you for-  
602  
603 Student:  
604 Yeah. (laughs)  
605  
606 Interviewer:  
607 ... a lazy Saturday now and then.  
608  
609 Student:  
610 Yes. Yes.  
611  
612 Interviewer:  
613 (laughs)  
614  
615 Student:  
616 That's not what I'm saying, but.  
617  
618 Interviewer:  
619 All right. So what motivates you to pursue an engineering degree?  
620



621 Student:

622 Well I've always been like a very, um, kind of hands on person. And I  
623 like to see how things work and like the, like little things behind the  
624 scenes that make things happen in life. Like little-

625

626 Interviewer:

627 Cogs and gears kind of?

628

629 Student:

630 Yes, exactly. So that's kind of what led me towards engineering. And  
631 then, uh, I ended up ch- choosing mechanical engineering just 'cause I'm  
632 a hands on person. Like, I'm a very visual person so I didn't want to do  
633 like electrical or computer science or something. So, I don't know. Does  
634 that answer your question?

635

636 Interviewer:

637 I think so. Why do you think you're such a hands on person? Do you  
638 know?

639

640 Student:

641 Um. Probably comes from my upbringing honestly. I spent a lot of my  
642 childhood playing with my cousins and sisters outside, working with my  
643 grandma in the garden, stuff like that. Working with my hands a lot, so I  
644 don't know. I've just always been like that. Then I worked on farm and  
645 ranch all through high school, first several years of college. So I got to  
646 build a lot of things and-

647

648 Interviewer:

649 Okay.

650

651 Student:

652 ... work with my hands a lot and it's just what I tend to enjoy.  
653  
654 Interviewer:  
655 So you just kind of think that mechanical engineering is where you'll  
656 best be able to do that sort of?  
657  
658 Student:  
659 Yeah. 'Cause I think it's, it's kind of taking a step beyond that where you  
660 get to build the things that go into the everyday products you see. Like  
661 build a design that parts for machinery and stuff like that. So like that.  
662  
663 Interviewer:  
664 Okay.  
665  
666 Student:  
667 If that answers your question.  
668  
669 Interviewer:  
670 If you were to make a pie chart of your motivation as a student to, you  
671 know, work and study and learn and such, what percent you, would you  
672 say that you're motivated by your grades versus your desire to learn the  
673 material?  
674  
675 Student:  
676 That's tough. Um. I would say probably like 55/45 in favor of grades.  
677 Primarily just 'cause I want to have a GPA that I can put on a resume  
678 and be proud of, that employers will see.  
679  
680 Interviewer:  
681 Okay.  
682

683 Student:  
684 Not immediately count that against me, so.  
685  
686 Interviewer:  
687 So you mainly are looking to be higher level sort of there.  
688  
689 Student:  
690 Yeah. Yeah.  
691  
692 Interviewer:  
693 Okay. Would you say that's the same for all of your classes?  
694  
695 Student:  
696 Um. No, probably not. 'Cause like, I don't know. I'm in ... I don't know. I  
697 feel like there's a, a little bit of a balance in like, most of my engineering  
698 classes 'cause I wo- I'm okay with as long as I'm like not getting a C, I  
699 don't really care. I would rather be confident in the material and know  
700 what I am doing than be at an, than have a B and be like, crap I don't  
701 have an A. Dang it. Then stress about that.  
702  
703 Student:  
704 So I'm not looking, but then at the same time if I have a C or a D or  
705 something I realize that, hey I need to get this grade up 'cause this is  
706 going to be bad.  
707  
708 Interviewer:  
709 Okay.  
710  
711 Student:  
712 I can't, this is going to drop my GPA down. So-  
713

714 Interviewer:

715 So it depends on where you are.

716

717 Student:

718 It kind of depends on where you are, yeah. But then at the same time

719 like, when you're struggling in a class it's usually 'cause you don't

720 understand it, so (laughs) you kind of have to focus on understanding the

721 material to bring your grade up. So it kind of, kind of, one is kind of

722 dependent on the other I guess.

723

724 Interviewer:

725 Right. So to try and pair it back at you, you care more about your grades

726 up until you get into a B or A range and then you stop caring about the

727 grade and start caring about the material. But you do need to care about

728 the material to get to the B and A range. Does that sound right?

729

730 Student:

731 Yeah. It's kind of all over the place. Um.

732

733 Interviewer:

734 Is, is-

735

736 Student:

737 I guess ultimately yeah, you do need to care about the material. But-

738

739 Interviewer:

740 Okay. So you care about the material more but you also need to care

741 about being in a comfortable range for your GPA?

742

743 Student:

744 Yeah.

745  
746 Interviewer:  
747 Okay.  
748  
749 Student:  
750 Yeah.  
751  
752 Interviewer:  
753 Okay. In what ways are your grades important to you? Is it just the GPA  
754 in hiring, or?  
755  
756 Student:  
757 Yeah.  
758  
759 Interviewer:  
760 Anything else, or?  
761  
762 Student:  
763 I mean, my parents won't like it if I'm getting bad grades, so.  
764  
765 Interviewer:  
766 That's fair.  
767  
768 Student:  
769 They, that's probably the next biggest one.  
770  
771 Interviewer:  
772 Okay. And how about learning? Why was that important to you?  
773  
774 Student:  
775 Learning's very important. I mean you learn in everything you do. That's

776 one of the most important traits as a leader and as a, as a good employee,  
777 as a good everything in life is being able to learn constantly. 'Cause  
778 you're always picking up new information, you're always encountering  
779 these situations. So, um, learning whether it be in a classroom or work  
780 environment or just in your day to day life is important for personal  
781 growth as a human being.

782

783 Interviewer:

784 Okay. Let's see.

785

786 Student:

787 Professionally, I don't know.

788

789 Interviewer:

790 Kind of hearing improve self, improve your ability to do things and  
791 learning itself is the three reasons learning is important. How would you  
792 rank those?

793

794 Student:

795 Probably, probably improving yourself first. I don't know. 'Cause I don't  
796 know. I think it's important to be like a well-rounded individual and, um,  
797 learning is a big part of that. I don't know, both for your own kind of self  
798 esteem and self worth and, I don't know. What were the other two?

799 (laughs)

800

801 Interviewer:

802 The other two were learning in order to be competent at, more  
803 competent at what you do and learning for the sake of learning.

804

805 Student:

806 Yeah. I think learning for the sake of learning is next just 'cause for

807 reasons I say to learning. And then, um, learning for work is probably  
808 last because it's only really like in a job setting. Whereas-

809

810 Interviewer:

811 Well not necessarily jobs only.

812

813 Student:

814 Oh.

815

816 Interviewer:

817 It's what are you doing? Are you, uh, doing jobs or school work or fun  
818 things or-

819

820 Student:

821 Yeah.

822

823 Interviewer:

824 ... just whatever you decide to be doing at that moment.

825

826 Student:

827 Yeah. See I feel like that's another one where they all kind of just tie in.

828

829 Interviewer:

830 Yeah. I mean they're related but just-

831

832 Student:

833 Yeah.

834

835 Interviewer:

836 ... if you were ranking learning for learning itself, learning for being  
837 good at doing things, and learning for self improvement.

838

839 Student:

840 I still think learning for self improvement, learning for learning and then

841 learning for being good at things.

842

843 Interviewer:

844 Okay.

845

846 Student:

847 Because you can learn a lot about something and not be good at it, right?

848

849 Interviewer:

850 (laughs)

851

852 Student:

853 I like to golf and I've learned a lot about golf but I suck at golf. So, um,

854 but at the same time that's still fun 'cause it's learning a new hobby,

855 learning a new sport, and so.

856

857 Interviewer:

858 All right. So learning is fun.

859

860 Student:

861 Yeah, I think so.

862

863 Interviewer:

864 Say you have to choose a professor for a core course. Like you, there's

865 two different courses you can enroll in a semester, same course, and you

866 need to take it but both work for your schedule and they're taught by

867 different professors. So let's say you, maybe you just know their

868 reputation, maybe you've actually taken c- classes from them before but



869 professor A it's going to be more difficult to succeed in that class but  
870 you are likely to learn a lot. Professor B it's going to be pretty easy to  
871 succeed but you likely won't learn quite as much. Which one would you  
872 enroll in?

873

874 Student:

875 I'd go with the first one for sure.

876

877 Interviewer:

878 All right. Why do you choose the first one?

879

880 Student:

881 So, 'cause those type of classes are more rewarding. Like I have, like  
882 one of the classes I took here was kind of like the second example,  
883 where the class was pretty easy. I didn't really, I, so I got an A but I don't  
884 really think I learned a whole lot in it and it's kind of, kind of just leaves  
885 a bad taste in my mouth.

886

887 Interviewer:

888 Okay.

889

890 Student:

891 'Cause like I didn't really get anything out of it. Like yeah I got an A but  
892 ...

893

894 Interviewer:

895 You just got a GPA bump.

896

897 Student:

898 Yeah I just got a GPA bump. But whereas there's, I don't know, I think  
899 measurements is a great example of a class that's really hard but you

900 learn so much in that class and cover so many topics. And it's-

901

902 Interviewer:

903 Okay.

904

905 Student:

906 ... it's, it's, it's more rewarding. And like I said, I mentioned that circuits  
907 class earlier, that was, that's one of my crowning achievements 'cause I, I  
908 put so much work into that class and I learned a lot about that class. And  
909 that's, that B is worth a hell of a lot more to me than the A that I got just  
910 for showing up, so.

911

912 Interviewer:

913 Gotcha. Can you think of a situation where your answer might change?

914

915 Student:

916 (laughs) I mean if, if I fail the class and have to retake it, it might change  
917 just 'cause that's frustrating. But, um, I don't know. And then there's like  
918 non major specific classes that where that might not be the case just  
919 because I just don't have enough energy devote that much time into a  
920 class that isn't specifically for my major, or is-

921

922 Interviewer:

923 So if you had to take say a history class or something-

924

925 Student:

926 Yeah.

927

928 Interviewer:

929 ... you might choose professor B?

930

931 Student:  
932 Yeah I might.  
933  
934 Interviewer:  
935 Yeah. Just because it's not as interesting to you or?  
936  
937 Student:  
938 I would say it's not that it's interesting. It's just not worth my, it's not  
939 what I'm going to college for, like-  
940  
941 Interviewer:  
942 Not what you need to focus on?  
943  
944 Student:  
945 Yeah. It's not what I need to focus on. Like my, like I said earlier, my  
946 life is busy now with my, with school and-  
947  
948 Interviewer:  
949 Sure.  
950  
951 Student:  
952 ... and then work outside of that and personal relationships and stuff.  
953 Like I don't, I don't, I just don't have the energy to devote to a class that  
954 isn't specifically for my degree.  
955  
956 Interviewer:  
957 Gotcha.  
958  
959 Student:  
960 Or my minor or something, so.  
961

962 Interviewer:

963 Okay. Tell me about your learning and studying strategies.

964

965 Student:

966 Learning strategy. Well I think my biggest one is s- for learning and  
967 studying is you got to be there. Go to class, go to, and it's another thing  
968 that I've developed over, as I've gotten further along in my academic  
969 career is just taking meticulous notes. I take lots of notes in class and it  
970 helps me a lot. Just I think writing down what the professor is saying  
971 helps me digest what they're saying more so I retain it a little better and I  
972 can reference that back when I'm doing homework or projects or  
973 studying for a test or something. And kind of if it's like a design problem  
974 I can kind of build a road map in my head of what the steps are for this.  
975 Or like if I'm starting with this information, how I get to this. So, um,  
976 then for studying, I go over all the work of mine and if it's stuff I did  
977 wrong, I see where I went, see what I did wrong and why. I think about  
978 why I did that, what tripped me up here. Did I, why did I confuse these  
979 two things or something like that. Um. And then I usually go over my  
980 notes and go over lecture slides or whatever extra material's given by the  
981 professor. I don't know. That's about it. Then I, I usually go to the book  
982 as a last resort usually, which is kind of sounds bad but, um, I don't  
983 know. I usually use that or reserve that for stuff I'm really struggling on  
984 or if I am missing information in my notes or something and I need to  
985 find it.

986

987 Interviewer:

988 Okay. How did you come to use these strategies?

989

990 Student:

991 Uh. It's just like, I found that's what works for me. I don't know.

992

993 Interviewer:  
994 Kind of trial and error thing?  
995  
996 Student:  
997 Yeah kind of trial and error. Just, um, the notes thing is really, is really  
998 just from experience. Um, 'cause you never know when a professor's  
999 going to cover something in class and it might not be in the online  
1000 PowerPoints or in the book that they, that is something that they  
1001 specifically care a lot about and want to be on the test. Or, and want you  
1002 to know. So like, um, plus I think it's good for me just to have a record  
1003 of that stuff so if in five years I have a question about a thermo two  
1004 problem, I can go dig those notebooks out and-  
1005  
1006 Interviewer:  
1007 Right.  
1008  
1009 Student:  
1010 ... find something for it and reference it. So, um, yeah. Mainly just trial  
1011 and error and I found that this is what works for me, this is how I retain  
1012 information the best. And, um, yeah.  
1013  
1014 Interviewer:  
1015 Okay. How do you think these strategies have changed over time?  
1016  
1017 Student:  
1018 Well, I definitely take better notes. I make a more concentrated effort to  
1019 do the homeworks. (laughs) And make sure I pick up my homeworks so  
1020 I have those to reference off of. Um. And then just I mean the time  
1021 management aspect of it is a lot different too 'cause I, I do a better job  
1022 now of like blocking out time earlier in the week for an assignment that's  
1023 due on Friday rather than doing it all on Thursday night. So, so that I

1024 can, if I have problems I can go to office hours or, um, text a friend and  
1025 say something like hey, did you do this problem? I he- I'm stuck on this.  
1026 Can you help me? Something like that. So the time management part has  
1027 probably changed the most and I'm, I procrastinated a lot freshman and  
1028 sophomore year. So, um, kind of improving that has made everything  
1029 else better 'cause it makes everything else a little easier.

1030

1031 Interviewer:

1032 How do you feel when you realized you need to actually crack down on  
1033 (laughs) time management and-

1034

1035 Student:

1036 It was, it was just like, oh this is so much nicer when I'm not like  
1037 panicking about things the night before they're due. And like when I have  
1038 an assignment done I can just put it in my folder and be like, this is due  
1039 Friday. I'll just sit on this for a little while. I don't have to worry about it.  
1040 I can go do something that I want to do.

1041

1042 Interviewer:

1043 So kind of a relief?

1044

1045 Student:

1046 Yeah, it's definitely a relief. And like kind of a (laughs) I don't know, the  
1047 thing that like was the turning point for me was I like, I just absolutely  
1048 bombed my Calc 3 final 'cause I like didn't study enough for it. I just  
1049 like procrastinated it 'cause I did other stuff. And just like bombed it and  
1050 I was like, oh my god no. Like it was the most dejected I've ever felt  
1051 after a test and like that was kind of the breaking point for me. I was like  
1052 okay I need to, I need to do better. Like I need to make some changes  
1053 and stuff.

1054

1055 Interviewer:  
1056 Okay.  
1057  
1058 Student:  
1059 Um. Yeah.  
1060  
1061 Interviewer:  
1062 Okay. In general how much effort would you say that you put into your  
1063 classes?  
1064  
1065 Student:  
1066 I put a lot of effort into it. I mean I didn't, I spend most of my day  
1067 working on classwork and homework and stuff like that. So, um, I don't  
1068 know. I think I put quite a bit of effort into my classes.  
1069  
1070 Interviewer:  
1071 Okay. Just based on how much time you spend at it and-  
1072  
1073 Student:  
1074 Yeah just like based on how much time I spend at it and (laughs) how  
1075 much time I spend thinking about it. Like I'll be lying in bed at night  
1076 thinking about [design class] problems.  
1077  
1078 Interviewer:  
1079 (laughs)  
1080  
1081 Student:  
1082 Like oh it's, I wonder what happens if I change that. How does that  
1083 effect this diameter or something like ... so I feel like these, it's just  
1084 constantly in my mind. So I'm constantly like working on stuff, so I  
1085 don't know.

1086

1087 Interviewer:

1088 Okay. Do you feel like you learn more from your classes that you put

1089 more effort into?

1090

1091 Student:

1092 Absolutely.

1093

1094 Interviewer:

1095 Okay. And do you feel like you learn more from classes that require

1096 more effort than others?

1097

1098 Student:

1099 Yes. Um, 'cause I think classes that require more effort tend to force you

1100 to focus more and force you to think about it deeper, which builds, uh,

1101 builds a little better understanding in your brain and, um, yeah.

1102

1103 Interviewer:

1104 Okay. What about do you feel like you put more or less effort compared

1105 to your peers?

1106

1107 Student:

1108 I think it really depends on the class. Um. I think on the whole, I put

1109 about average or maybe a little more effort. There's definitely been, like

1110 for example in senior design I, I, to be honest I'm super burned out of

1111 our project right now and it's really like been a struggle for me to work

1112 on it recently. So I'm putting a little less effort into that class than

1113 probably a lot of my classmates are right now and it's not necessarily

1114 good. But, um, I think, but I think on the whole I put in average to above

1115 average, about average as compared to my classmates.

1116



1117 Interviewer:

1118 Okay. Why do you say that?

1119

1120 Student:

1121 Um. Primarily because I don't know, I don't, I don't think I'm, I don't  
1122 think stuff come as naturally to me as some people. So some people can  
1123 like, I think can not put a lot of effort in and still just be, still be good  
1124 students just because it's just easy for them. Um. But at the same time, I  
1125 think there are definitely people where it comes harder to them than it  
1126 does to me. So I don't think I have to put in quite as much effort as they  
1127 do. Um. I don't know. But I, I don't think I've, I don't think I slack by  
1128 any means.

1129

1130 Interviewer:

1131 Okay. Can you think of a subject or a class where you had to put in a lot  
1132 of effort to succeed and can you tell me about it?

1133

1134 Student:

1135 Circuits for sure. 'Cause I was, 'cause that was a subject that did not  
1136 come easily to me and I'm not good at electronics. So like, after just  
1137 completely failing the first test I was like, oh my god I have to like, I'm  
1138 going to have to put a lot of effort into this. 'Cause I studied quite a bit  
1139 for the first test and like had done the homeworks and other things and  
1140 just like absolutely bombed it. So I was like, oh man I'm going to have  
1141 to work hard at this if I want to pass this class 'cause I do not want to  
1142 retake it over the summer. So, I took meticulous notes, went to office  
1143 hours, studied with friends, all the homeworks, went over the  
1144 homeworks, went over sample problems, read the book, yada yada yada.  
1145 And, got a B, and I was super proud of that, so.

1146

1147 Interviewer:

1148 Okay. How did you feel about how difficult that class was?

1149

1150 Student:

1151 I think that class is difficult because the, as a mechanical engineer I  
1152 don't, or an engineer student, I don't spend a lot of time thinking about  
1153 circuits and capacitors and RLC circuits and how [inaudible 00:41:02]  
1154 work. So it was just core subject or course matter that was a little outs-  
1155 or a little, quite a bit different then what I had been working on and what  
1156 had been kind of in my realm up to that point. And then also it's just,  
1157 [instructor] just teaches that class hard. Like he's, I don't know, he's not  
1158 the most accommodating professor and he's very like, it's my way or the  
1159 highway. So which isn't necessarily a bad thing. It's just he, something  
1160 you have to recognize going in. So, um, that's probably the element that  
1161 made that class hard.

1162

1163 Interviewer:

1164 Okay. How did you feel about that though?

1165

1166 Student:

1167 I mean, it was easy to be kind of frustrated because like, his grading  
1168 practices were kind of, were pretty strict and pretty unforgiving. So it  
1169 was, like a lot of missed points on like a freaking minus sign or algebra  
1170 error or stuff like that, which is very frustrating 'cause it's like man I was  
1171 so close. I just made one tiny little mistake and I missed 10 points for it,  
1172 like oh my gosh. But, um, I don't know. Just recognizing that he, he does  
1173 it like that for a reason and recognizing that and just working around  
1174 that. Like okay, that means I need to be more particular. I need to realize  
1175 I need to figure out how to study in the right way that I can work these  
1176 problems in the right way that I understand it and am doing them the  
1177 way he wants me to do them, so.

1178

1179 Interviewer:  
1180 Okay. So what did you get out of the experience of taking that class?  
1181  
1182 Student:  
1183 I mean, obviously I learned quite a bit about circuits (laughs)-  
1184  
1185 Interviewer:  
1186 One would hope.  
1187  
1188 Student:  
1189 ... that I didn't know beforehand. And then obviously I got a, I got an  
1190 enormous sense of pride out of that. I just, kind of overcoming that  
1191 moment where a lot, where I could have just dropped the class and said  
1192 I'll take it over the summer with an easier professor.  
1193  
1194 Interviewer:  
1195 Sure.  
1196  
1197 Student:  
1198 Um. I'm pretty proud of that and I think that, I don't know, it's something  
1199 I, I can hang my hat on as an example for questions like this. (laughs)  
1200 So, um, and it was just, I mean it was a good self reassurance like I can  
1201 do this. Like I'm not stupid. So I don't know. I tend to have like, kind of  
1202 imposter syndrome sometimes.  
1203  
1204 Interviewer:  
1205 Hm.  
1206  
1207 Student:  
1208 I don't know if you know, you know what that is? Okay, yeah.  
1209

1210 Interviewer:  
1211 I know what that is.  
1212  
1213 Student:  
1214 So.  
1215  
1216 Interviewer:  
1217 (laughs)  
1218  
1219 Student:  
1220 So that, so that's a moment I can point to like, like you belong here, you  
1221 know what you're doing. Don't, don't overthink this. (laughs) You think,  
1222 you wouldn't have made it this far if you didn't belong, if you weren't  
1223 supposed to be here, so.  
1224  
1225 Interviewer:  
1226 Right. Great.  
1227  
1228 Student:  
1229 Mm-hmm (affirmative).  
1230  
1231 Interviewer:  
1232 How about can you think of a subject or a class or something where you  
1233 were able to succeed with very little effort at all and could you tell me  
1234 about that?  
1235  
1236 Student:  
1237 Yeah. Um. Fluids was kind of that way. Um.  
1238  
1239 Interviewer:  
1240 Okay.

1241  
1242 Student:  
1243 And I also, I think that was mainly just because of the way the instructor  
1244 graded. (laughs) Honestly I think he was pretty forgiving on tests and  
1245 stuff 'cause I didn't put as much effort into that class as I do usually. I  
1246 got an A in the class pretty easily, so. Um. I don't know. Looking back  
1247 on that I, I feel like that material wasn't as hard as I thought it was at the  
1248 time. But at the same time I know I didn't work as hard in that class and  
1249 I probably should've got a low grade. If I had, if like another teacher had  
1250 taught that class, knowing their, how their grading policies and their  
1251 teaching style is, I think I would've done worse, but.

1252  
1253 Interviewer:  
1254 Okay. So you think your ability to succeed without effort in the class  
1255 was mostly just due to the teacher being forgiving?

1256  
1257 Student:  
1258 I do, yeah. A little bit.

1259  
1260 Interviewer:  
1261 How did you feel about the class being so easy?

1262  
1263 Student:  
1264 I mean, on a surface level it's like oh yeah cool. I don't have to work  
1265 very hard in this class and I can get a good grade. But then like deeper  
1266 than that it's like a little frustrating 'cause like I never forced myself to  
1267 work very hard 'cause I never felt challenged.

1268  
1269 Interviewer:  
1270 Hm.

1271

1272 Student:  
1273 Um. Which I mean, it takes a lot of stress out of my life but I didn't  
1274 probably learn quite as much as I maybe should've, so.  
1275  
1276 Interviewer:  
1277 Fair.  
1278  
1279 Student:  
1280 But then at the same time like looking back I've had to use some stuff  
1281 from that class in other classes and I'm like, oh okay yeah I know how to  
1282 do this. Like, yeah I did learn that. That's right, okay, so.  
1283  
1284 Interviewer:  
1285 So you still got something out of it.  
1286  
1287 Student:  
1288 So yeah. So I think I did learn a lot but I don't know.  
1289  
1290 Interviewer:  
1291 (laughs) Some mixed feelings in there.  
1292  
1293 Student:  
1294 Yeah. It's a little bit.  
1295  
1296 Interviewer:  
1297 What did you get out of that class?  
1298  
1299 Student:  
1300 Um. How to calculate flow, pressure.  
1301  
1302 Interviewer:

1303 (laughter)  
1304  
1305 Student:  
1306 That type of stuff, so.  
1307  
1308 Interviewer:  
1309 What did you get out of it being so easy for you?  
1310  
1311 Student:  
1312 I don't know. I mean it made my semester easier, made my semester a  
1313 little less stressful which I guess is nice.  
1314  
1315 Interviewer:  
1316 Mm-hmm (affirmative).  
1317  
1318 Student:  
1319 But, um, that class was a little, it was weird because it was like kind of  
1320 vague. So I kind of, so I would study everything we'd discussed and like  
1321 go into the test not really knowing what was going to be on the test. Like  
1322 I don't really know what, if I studied the right stuff or not. And I, there  
1323 was a couple of times I came out of a test thinking like oh god I did bad  
1324 on that. And then got like high B's or something and I was like, okay  
1325 whoa. So I think that's part of what that course gave me, was that  
1326 appreciation for the difference between challenging material but you  
1327 know exactly what is expected of you and not as challenging material  
1328 but like very vague expectations or vague like, vague on what you're  
1329 getting tested over, vague expectations. So I think that is a good example  
1330 of that as compared to some of, some of my other classes that I've taken.  
1331  
1332 Interviewer:  
1333 Okay. Think about at student you know, uh, or a hypothetical student

1334 who puts in a lot of effort to succeed. They do succeed but every time  
1335 you see them, they're working their butt off at it.

1336

1337 Student:

1338 Mm-hmm (affirmative).

1339

1340 Interviewer:

1341 What does that tell you about how smart they are?

1342

1343 Student:

1344 I mean I think it, it points to a level of intelligence there and they realize  
1345 need to work very hard to succeed. So I mean I, I mean maybe they're  
1346 not the most academically like naturally academically inclined person in  
1347 the world but they recognize that, hey if you want something you're  
1348 going to have to work really hard to get it. And that's a little, that's a, sort  
1349 of a different kind of intelligence there.

1350

1351 Interviewer:

1352 So you're telling me that there are different categories of intelligence.

1353

1354 Student:

1355 I think so. Yes.

1356

1357 Interviewer:

1358 People kind of rank differently at different-

1359

1360 Student:

1361 Yes.

1362

1363 Interviewer:

1364 ... parts and that one just tells you maybe lower on that subject but



1365 higher in just being cognizant of it.  
1366  
1367 Student:  
1368 Yeah, yeah.  
1369  
1370 Interviewer:  
1371 Smarts, okay. What about a student that doesn't put a lot of effort in but  
1372 succeeds anyway? How do, smart do you think they are?  
1373  
1374 Student:  
1375 I think they're obviously pretty smart if they can do that. So I don't  
1376 know. My roommate is sort of that way. He's, I mean I've known him  
1377 since I was, since we were like 10 so-  
1378  
1379 Interviewer:  
1380 Mm-hmm (affirmative).  
1381  
1382 Student:  
1383 ... I've known him for a long time and academics come really easy to  
1384 him. He's always been very smart. Both his parents are math teachers.  
1385  
1386 Interviewer:  
1387 Mm-hmm (affirmative).  
1388  
1389 Student:  
1390 So, um, he's just good at that. I don't know. And he's obviously very  
1391 intelligent but I don't know. He, but he also kind of fits the personality  
1392 of like can do complex, matrix algebra like almost in his head and write  
1393 complicated industrial engineering programming, stuff like that. And  
1394 then like doesn't know how to mow a yard.  
1395

1396 Interviewer:  
1397 (laughter)  
1398  
1399 Student:  
1400 So like, stuff like that. So I think that does go into like there's different  
1401 types of intelligence like, um, that probably just means that person has  
1402 very high academic intelligence and doesn't mean they're not very  
1403 intelligent in other areas. That's just all I know about them.  
1404  
1405 Interviewer:  
1406 So basically they're both succeeding, they're both smart.  
1407  
1408 Student:  
1409 Yeah.  
1410  
1411 Interviewer:  
1412 It's just what areas are they smart.  
1413  
1414 Student:  
1415 Yeah. I think so. There's different paths to success. It's all about  
1416 recognizing the one that you're on and how to best-  
1417  
1418 Interviewer:  
1419 And the one that works for you.  
1420  
1421 Student:  
1422 Yes.  
1423  
1424 Interviewer:  
1425 Okay. So tell me about a specific time when you received feedback that  
1426 you were not performing to expectation. It can be a class but it doesn't

1427 have to be. It could be work, relationship, whatever.  
1428  
1429 Student:  
1430 Um. I've had times at work when that has happened. Where like I didn't  
1431 know something or I didn't know how something worked or how we did  
1432 something that I probably should've and-  
1433  
1434 Interviewer:  
1435 Can you think of a specific example?  
1436  
1437 Student:  
1438 Okay, so I work at [cafeteria].  
1439  
1440 Interviewer:  
1441 Mm-hmm (affirmative).  
1442  
1443 Student:  
1444 Um, I'm a student lead. So basically the role of a student lead is you're  
1445 kind of like one of the full-time cooks but they, like you just kind of get  
1446 put everywhere and they expect you to just fill in. So I don't, I didn't  
1447 really know much about one of the platforms we were on and just kind  
1448 of getting some feedback. Like hey you should probably know this stuff  
1449 and me being like, yeah probably ah, crap. So, I don't know. I try not to  
1450 take that stuff personal. Like, they're not angry at me for not knowing  
1451 something. They're just trying to help me I think, usually. So I don't  
1452 know. I think it's important to like remove the emotional part from  
1453 criticism like that because a lot of ti- because they're not trying to  
1454 personally attack you. They're just pointing out something that you need  
1455 to improve on or something.  
1456  
1457 Interviewer:

1458     Okay. How did you respond when you were told that you weren't-

1459

1460     Student:

1461     I was like okay yeah I'll work on it. And then I went and we have these

1462     sheets of standard operating procedures for like every platform and I

1463     studied the SOP sheet for that platform. And, um tried to remember, like

1464     the steps or the order of the steps and how to shut down things and that

1465     type of stuff, so.

1466

1467     Interviewer:

1468     Okay. What was the outcome of that action?

1469

1470     Student:

1471     I mean, it helped and there have, I've just worked there more now so I

1472     grasp a little more of it and I have it down a little better. More

1473     comfortable with it, so.

1474

1475     Interviewer:

1476     Would you say you're a better worker because of it?

1477

1478     Student:

1479     Yeah.

1480

1481     Interviewer:

1482     Did you learn anything from that experience?

1483

1484     Student:

1485     Um. I think learning how to handle criticism is, that was a good learning

1486     experience for that because it, I'm not naturally very good at that. I tend

1487     to not be able, or I, it's, it takes a conscious effort for me to not take it

1488     personal. So that was a good example of where, me recognizing like

1489 they're not attacking me personally. They're not mad at me. They just are  
1490 trying to let me know something like pointing out something that I need  
1491 to know for my job. Like I need to recognize my own shortcomings and  
1492 improve on them, so.

1493

1494 Interviewer:

1495 Okay. What advice would you give to someone who is having trouble  
1496 with something similar?

1497

1498 Student:

1499 Ask for help. Reach out to those around you. I mean in school and in  
1500 work you usually always have a support system around you. It's just  
1501 recognizing that and being able, or being willing to swallow your pride  
1502 and ask for help usually.

1503

1504 Interviewer:

1505 Reach out and grab it sort of?

1506

1507 Student:

1508 Um. Yeah. Yeah.

1509

1510 Interviewer:

1511 Okay.

1512

1513 Student:

1514 'Cause I know that K State on an academic level, K State has staff  
1515 tutoring.

1516

1517 Interviewer:

1518 Mm-hmm (affirmative).

1519

1520 Student:  
1521 Professors have office hours. TAs have office hours.  
1522  
1523 Interviewer:  
1524 Sure.  
1525  
1526 Student:  
1527 Stuff like that. So there's tons of resources available. You just have to be  
1528 willing to recognize that you're not doing so hot and be willing to ask for  
1529 help, so.  
1530  
1531 Interviewer:  
1532 Great.  
1533  
1534 Student:  
1535 Or utilize, utilize the resources around you to-  
1536  
1537 Interviewer:  
1538 Yeah. And see what's around you and use it and be willing to recognize  
1539 that you need to.  
1540  
1541 Student:  
1542 Yeah. Yeah.  
1543  
1544 Interviewer:  
1545 Okay. Do you care if your peers judge you when you do poorly?  
1546  
1547 Student:  
1548 I mean yeah I care a little bit because I want them to recognize that I'm a  
1549 productive member of the team. Um, and I hope that I have, I mean I  
1550 feel like with most of my coworkers and most of my like, class, team,

1551 like group mates or something, like I have proven to them that I'm  
1552 competent and work hard and, and know them enough on a personal  
1553 level that like, I don't know, that they recognize that if I don't know  
1554 something I'm going to work to understand it. Or use my resources to  
1555 improve upon that or something. So, so yeah I care but I hope that, but  
1556 I'm not like, I don't know what I'm trying to say. Yeah I care about it but  
1557 I'm not like, going to stress about what they think of me really.

1558

1559 Interviewer:

1560 Okay.

1561

1562 Student:

1563 So.

1564

1565 Interviewer:

1566 So why do you feel that you care but not that much? (laughs)

1567

1568 Student:

1569 I don't know. 'Cause kind of like what I said. I, I mean I want them to

1570 recognize that I'm a productive member of the team and that I'm-

1571

1572 Interviewer:

1573 Mm-hmm (affirmative).

1574

1575 Student:

1576 ... working hard and trying my best. That I'm not just like goofing off

1577 and-

1578

1579 Interviewer:

1580 Sure.

1581

1582 Student:

1583 ... not trying. So, um, but then at the same time like, you're not going to  
1584 make everyone like you. You're not, you're never going to win  
1585 everybody over, so you just kind of have to accept that, move on. Like  
1586 people aren't going to like you in life, it's okay. So, mm-hmm  
1587 (affirmative).

1588

1589 Interviewer:

1590 Okay. What about your professors? Do you care if they judge you when  
1591 you do poorly?

1592

1593 Student:

1594 Um. Yeah. I care. I mean I, it's kind of like what I talked about earlier. I  
1595 mean I, I don't want them to think I'm a lazy kid who just sits in the back  
1596 and plays on his phone. Like I, I want them to recognize that I'm  
1597 working hard and trying to do my best in that class, so.

1598

1599 Interviewer:

1600 Why?

1601

1602 Student:

1603 I mean from a professional perspective I hope that I can ask to, as them  
1604 as references one day.

1605

1606 Interviewer:

1607 Okay.

1608

1609 Student:

1610 And that they would have a good, good things to say about me. And, and  
1611 just I don't know. I know that professors, or a lot of professors, put a lot  
1612 of work into their classes and it's, I know that if I was sitting up there, or



1613 if I was standing up in front of that lecture every day and was staring  
1614 back at 25 kids not paying attention, taking a nap, on their phones, that  
1615 would bug the crap out of me. So I want them to recognize that I'm  
1616 hearing what they're saying and I'm engaged, so. I don't know.

1617

1618 Interviewer:

1619 Okay. Do you think you'd learn more from a, an experience that's  
1620 challenging or not very challenging?

1621

1622 Student:

1623 Challenging, yeah. For sure.

1624

1625 Interviewer:

1626 Okay. Do you care if you succeed during the experience?

1627

1628 Student:

1629 Um. I mean some more than others 'cause like, there's hard things where  
1630 there's not really any negative consequences if you screw it up the first  
1631 time. But like there's other times where it can be a pretty difficult thing  
1632 where you get one shot at it and if you mess it up then it's a pretty costly  
1633 mistake. So obviously in those senses I care a little more but I think it's  
1634 important to learn from failure and recognize that failures happen in life,  
1635 so.

1636

1637 Interviewer:

1638 Okay. So it really just depends on the level of repercussions that-

1639

1640 Student:

1641 Yeah.

1642

1643 Interviewer:

1644 ... might come from failure.

1645

1646 Student:

1647 Yeah. Mm-hmm (affirmative).

1648

1649 Interviewer:

1650 Okay. And e- even if you thought you might fail at something but there

1651 might not be terrible repercussions, you'd probably take, take the

1652 challenge on anyway then?

1653

1654 Student:

1655 Yeah probably. Yeah.

1656

1657 Interviewer:

1658 Okay. Now that we've talked through all these different ideas related to

1659 your motivation, effort and challenges, how would you summarize what

1660 you shared with me?

1661

1662 Student:

1663 Oh. I think that I, I tr- I try to work hard as a student. I think I'm an

1664 average or above average student. Um. I care about my, I care what my

1665 professors think about me because their opinion is important. I mean

1666 they wouldn't be in the position that they are and they wouldn't have

1667 gotten as far in their field if they weren't good at what they do and

1668 weren't, I don't know. They're there for a reason so what their opinion of

1669 you, their opinion matters and you need to care about that, so. Um,

1670 'cause that, I feel like that kind of attitude ties over into your

1671 professional life and your personal life too. Like the opinion of people

1672 who are your superior matters (laughs) and you need to recognize that or

1673 else you're not-

1674

1675 Interviewer:  
1676 Mm-hmm (affirmative).  
1677  
1678 Student:  
1679 ... going to get very far in life. So, um, I don't know. But then at the  
1680 same time you can't tie your self worth to someone else's opinion of you  
1681 or else some, you can't let yourself get dragged by, down by that. You'll  
1682 never grow as a person.  
1683  
1684 Interviewer:  
1685 So it matters but only up to a point sort of?  
1686  
1687 Student:  
1688 Yeah, up to a point.  
1689  
1690 Interviewer:  
1691 All right. Anything else?  
1692  
1693 Student:  
1694 Learning is important. It's good to be a lifelong learner. I don't know.  
1695  
1696 Interviewer:  
1697 Okay. Did you gain any insights from our discussion?  
1698  
1699 Student:  
1700 Uh. Yeah I think so. I don't know. I've never like, thought about that  
1701 (laughs) or a lot of those things kind of in that much detail before, so.  
1702  
1703 Interviewer:  
1704 That you were sharing?  
1705

1706 Student:  
1707 I don't know, just thinking about like easy classes of how they're like  
1708 learning an easy class is a lot different than learning in hard classes. I,  
1709 I've never really thought about it in that much detail before. I don't  
1710 know.  
1711  
1712 Interviewer:  
1713 Okay. Do you think you gained any insights about yourself?  
1714  
1715 Student:  
1716 Yeah. I think so. I mean I think I, I think I've definitely, I'm definitely  
1717 more open to challenges (laughs) than I thought I was. I don't know, so.  
1718  
1719 Interviewer:  
1720 Okay. Anything else you'd like to share?  
1721  
1722 Student:  
1723 Not really.  
1724  
1725 Interviewer:  
1726 All right. Thank you very much.

1     **Interview Transcript 20: T**

2     Interviewer: Allison Adams

3     Date Interview conducted: 05/09/2019

4     Transcribed by: Rev.com

5

6     Interviewer:

7     Our goal today is for us to have a detailed discussion about your beliefs  
8     about or perceptions of the nature of your intelligence. The discussion  
9     will inform my understanding of the perceptions of engineering students  
10    and will help future decisions about the undergraduate engineering  
11    experience and how it can be improved for all students. I want to hear  
12    your own thoughts, perceptions. I'm expecting they'll be different from  
13    the thoughts and perceptions of others. There's no right or wrong  
14    answers. I just want to know what you think and I aim to understand  
15    your perspective, So, I'll ask questions like, what do you mean by that?  
16    And can you elaborate? These types of questions can end up being a bit  
17    awkward because they require you to reflect on your experiences. So I'll  
18    just leave you a long pause to think about it. Take your time if you need  
19    clarification, let me know.

20

21    Student:

22    Okay.

23

24    Interviewer:

25    Any questions?

26

27    Student:

28    Nope.

29

30    Interviewer:

31    All right, so tell me about yourself as a student?

32

33 Student:

34 As a student, I consider myself a moderate student. I currently have 3.6  
35 GPA. Um, currently I'm not working as hard as I could. I mean, I could  
36 have a 4.0 if I wanted to, but that would be at the sacrifice of all my,  
37 extra-curriculars and social time and that's just not a sacrifice I'm willing  
38 to make. I consider myself a decent student nonetheless. Um, I study as  
39 much as I need to, to keep my scholarship, and learn what I would need  
40 to do to be successful. Um, I tend to study in groups, with people... I  
41 enjoy chemistry and math is okay. [Calculus class] kind of sucks, but,  
42 yeah, that's about it. Anything else in particular?

43

44 Interviewer:

45 That sounds like a fairly good description. Uh, when you told me you're  
46 a moderate student or decent student, what do those words mean to you?

47

48 Student:

49 To me it means I am worse than some and better than some. So, I'm  
50 kinda right in the middle, I mean among my peers there are obviously  
51 those who are smarter and able to do the same that I am, with less effort  
52 and there are those who are doing what I am, but they have to study  
53 much more. So it's kinda like right in the middle. And that's um... and  
54 that's fine with me. Yeah.

55

56 Interviewer:

57 Okay. So, you mentioned you don't study as hard as you could because  
58 of the sacrifice. Can you just elaborate on that a tiny more?

59

60 Student:

61 Um, I'm in a lot of clubs, um, I enjoy Sky diving, rock climbing, I lift  
62 three times a week. I go to [dancing club]. Sometimes I'll go to [popular

63 bar], spend time with my friends, hang out. And it's part of like almost  
64 like just a social mental health perspective. It's like I sacrifice my grades  
65 to be able to hang out with my friends or enjoy myself and that's part of  
66 the college experience, you know? Like... And I guess it's a sacrifice I'm  
67 willing to make as long as I believe I'm learning what I need to be  
68 learning and still able to grasp the material on and I might not get every  
69 single little concept, but I still have like a broad understanding of what  
70 I'm learning and how to use it.

71

72 Interviewer:

73 Okay. So to just sort of pair it back, you're being as good a student as  
74 you deem at least necessary, but not at the expense of being also a well  
75 rounded person.

76

77 Student:

78 Correct.

79

80 Interviewer:

81 All right. So let's say hypothetically for a moment, you are in class and  
82 you start getting your exams back.

83

84 Student:

85 Yes.

86

87 Interviewer:

88 And when you see your exam, you feel like you've succeeded on it. How  
89 do you react and why?

90

91 Student:

92 Um, well it depends to like the extent of success. Like on some of my  
93 exams I'll get like 110% and I'll be like, well that means that I didn't

94 necessarily need to put as much time in to studying as I did because my  
95 exam score was high enough that I could still have them paved with  
96 90%. But then also, it means that I understand the material really well.  
97 And I like that. I like to understand things and grasp letting you know  
98 there's uh, there's some sense of satisfaction when you do really well on  
99 something. But then I'd be like, well hey, I can spend more time on  
100 something else instead of studying for this exam because I know it well  
101 enough. Or I think that maybe the course needs to be more difficult  
102 because if I'm already not studying as much as I could be and getting a  
103 really good grade on the exam, I'm not learning as much as I probably  
104 should be.

105

106 Interviewer:

107 Okay. So would you say your reaction kind of depends on how much  
108 effort you put into that exam?

109

110 Student:

111 Yeah, I would say so. Um, yeah. If I put a ton of effort into the exam  
112 and I got a really good grade I'll be like, Yeah and put a little bit less and  
113 then if I didn't put any effort and I got a really good grade I'd be like, Oh  
114 the exam should have been a bit more difficult in general. So...

115

116 Interviewer:

117 Okay. What do you consider to be success on an exam?

118

119 Student:

120 Success? 85% or higher. Um... And that's like a... like I select the higher  
121 end of success above, above, above the mean. It's like a... like a lower  
122 end of success. You know, like um, they'll post the average and they'll  
123 say, "this is the average of the exam". So as long as you're a better than  
124 average, that's like, like my lowest tier of success. And then like the



125 highest tier would be a mid range B to a high A no matter what the mean  
126 is.

127

128 Interviewer:

129 Okay. So both depend on the actual grade and on the class itself.

130

131 Student:

132 Yep.

133

134 Interviewer:

135 Have you ever been in a class that um, the average was just so very low?

136 (soft laugh)

137

138 Student:

139 Mm... No. Some of my calc exams, like the average have been 65 66

140 and I've gotten like a 70, you know, like 75 on the exam, whatever and

141 then they'll curve it and I'll end up getting a B.

142

143 Interviewer:

144 I was once in a class where the cutoff for an A was like 50%.

145

146 Student:

147 Yeah. Yeah.

148

149 Interviewer:

150 (Laughs)

151

152 Student:

153 It's... I mean... I would still consider that successful. I mean, you're,

154 you're still getting an A, even though you don't really understand all the

155 material on the exam, I guess. But that's what we choose.

156  
157 Interviewer:  
158 So it's not just the percent, it's also just the teacher's perception of where  
159 you should be?  
160  
161 Student:  
162 Oh yeah.  
163  
164 Interviewer:  
165 Okay.  
166  
167 Student:  
168 Sure. Sure.  
169  
170 Interviewer:  
171 What would you do if uh... You found out that you did better than  
172 someone in that class that you consider to be smarter than you are?  
173  
174 Student:  
175 Then I'd readjust my standards of smartness.  
176  
177 Interviewer:  
178 Can you elaborate on that?  
179  
180 Student:  
181 So... Well also, it depends on like what they put in, like if the person you  
182 are considering smarter, if they definitely put in any effort and then I  
183 studied for 10 hours for this exam, like a burden, then I'd be like, oh, it's  
184 like run it off as like lack of study on their part. But if we put in like  
185 equal amount of time and stuff, I'd be like on this subject I understand it  
186 better and I'm just naturally better at it. Like that's like part of what I

187 believe is that some people are just naturally better at certain subjects  
188 and certain topics than other people. (deep sigh) so...

189

190 Interviewer:

191 Okay. So, would you say that smartness then is just the things that you're  
192 naturally apt in or what?

193

194 Student:

195 Well kind of... Kind of naturally apt, I mean I've read, I've read a little  
196 bit of literature on it and as far as I understand it's... it's based on your  
197 upbringing and um... so it may seem like someone's like naturally better,  
198 but it's really just based on their history of teaching in that subject. So  
199 like when I say like... like this person is naturally better, really big,  
200 spend more prepared. Like there's an example, there's this guy, he uh, he  
201 claimed that you could teach brilliance and so he taught his daughter  
202 chess from a very, very, very young age. And now she's like the female  
203 world chess champion now. And it's like, he's got to prove that  
204 intelligence can be taught? So you know, like some people have been  
205 like taught intelligence and thinking methods. So...

206

207 Interviewer:

208 Okay. So, in-in reality it's uh, smartness is more just based on your  
209 background?

210

211 Student:

212 Not necessarily, more so I mean for some people it definitely could be,  
213 and it's really hard to differentiate because you can't, you can't tell just  
214 from the appearances like, oh, this person has a really good background  
215 of the subject or Oh, they're just naturally good at it. I think it's some of  
216 both. And in some cases it's a lot more on one than the other. It's just  
217 really difficult to tell.

218  
219 Interviewer:  
220 Okay, so it's a mixture?  
221  
222 Student:  
223 Yeah. Yeah.  
224  
225 Interviewer:  
226 Some, some people aren't naturally apt, some people are taught there and  
227 sometimes it's even someone recognized that aptitude and helped them  
228 focus on it?  
229  
230 Student:  
231 Yeah.  
232  
233 Interviewer:  
234 Okay. Would you share it with anyone else that you succeeded on that  
235 exam?  
236  
237 Student:  
238 If they asked. Yeah.  
239  
240 Interviewer:  
241 Okay. Why do you just kind of wait for someone to ask and why are you  
242 comfortable sharing?  
243  
244 Student:  
245 I'm comfortable sharing because it's the grade I earned and I don't really  
246 care that much if people think I did badly or good on the exams and be  
247 like, Hey, like this is what I got. And they'd be like, oh, that sucks. Or  
248 oh, that's great. (laughs) You know? So, um, I think it just stems from I

249 don't really care what people think about me or maybe if I share like a  
250 bad grade, they'd be like, oh you better study. And then like on the next  
251 com... The next exam comes around I'll be like, hey, you know, you  
252 gotta study and I'll be like, okay fine, (laughs) I'll go study. So,

253

254 Interviewer:

255 Okay. So they also become a bit of an accountability?

256

257 Student:

258 Yeah. Yeah, sure. Or it would be like the other way around? Like if I did  
259 really well and they're like, hey, what'd you get in? Okay, I got 98 and  
260 be like, Hey, could you help me out? And then that helps me learn and it  
261 helps them. So just makes it a little bit better.

262

263 Interviewer:

264 Makes sense. Is there anyone you particularly not want to share your g-  
265 grade with or....?

266

267 Student:

268 Um, some of them are a lot better than I am, like I'd be like a little  
269 embarrassed if someone got like 100% and I got like a 30 or 40 but,  
270 yeah, (laughs), you know, but... um, dunno. I mean the closer the  
271 connection, the more likely you are to share your grade with them. Like,  
272 if you know 'em, it's just like some random person, hey, what do you  
273 get? ...You know, don't necessarily want to tell you? But...

274

275 Interviewer:

276 So just basically, do you know them in such?

277

278 Student:

279 Yeah.

280

281 Interviewer:

282 Okay. So what if you, didn't feel like you've succeeded on that exam?

283 How would you react and why?

284

285 Student:

286 If I felt like I didn't succeed on the next exam or in class. I'd spend more

287 time studying, more time paying attention so I will succeed. I would

288 react like that because I feel like I need to succeed and I like to succeed.

289 I need to know the content of the classes to be successful in my career in

290 the future. And I think that means like a lot things like down the road. I

291 mean like money, you know, to provide for my future family. Like it's

292 just, it's like the next step and being a successful human legos.

293

294 Interviewer:

295 Okay. So how would you react if you saw like this core distribution or

296 whatever and you saw that there was students who did much better than

297 you did?

298

299 Student:

300 I'd study harder. Um, I'd try to, Oh, actually I'd go back and try to like

301 go over some of the concepts I didn't understand. I try to understand

302 those better as well as studying harder for the next exam. So that means

303 that I already didn't understand some of the stuff we learned compared

304 to what everyone else understood to let go of any of this, and work a

305 little bit harder on the next one. So,

306

307 Interviewer:

308 Okay.

309

310 Student:

311 Two pronged approach.

312

313 Interviewer:

314 So what if somebody that you didn't consider to be as smart as you are,  
315 did better than you on an exam?

316

317 Student:

318 I'll just be like like, hey, they studied more. Or Hey, we have a like a  
319 better background, and they're more naturally gifted in the subject.

320

321 Interviewer:

322 Okay. So maybe say more... Maybe it's not a case of you were smarter  
323 than them?

324

325 Student:

326 Yeah, maybe. And then like I said, it's really just like your metric as far  
327 as really... Uh, as far as really think the smartness is like a difficult thing  
328 to pin down, but I told them.

329

330 Interviewer:

331 Yeah, but you keep mentioning a metric of smartness?

332

333 Student:

334 Yeah.

335

336 Interviewer:

337 Do you...

338

339 Student:

340 Yeah. It's like uh, like an order system. So it's like in my chem lab, like  
341 there's, it's like for every individual thing like we all... We'll, we'll do

342 like a titration, whatever. And there's this one guy who's like... like right  
343 next to me and he's like incredible at it. And so as far as that one thing  
344 goes, he's obviously the best, the smartest, the brightest of doing that  
345 particular skill. Right? And then all of the skills that make up chemistry,  
346 you'd Kind of like... rank, so like... He's like really good at titration, this  
347 person like was really good on exams and so like this person's good at  
348 titration and at the exams. So perhaps they're the best in chemistry in  
349 general. So you can kind of like weave it together. I mean, you can't just  
350 take one thing. I mean, you've been really, really good at the exams, but  
351 you can't do anything at the lab then obviously you're not the best or  
352 most intelligent chemist.

353

354 Interviewer:

355 Okay. I think that makes sense. Would you share with anyone else that  
356 you didn't do very well on an exam or...?

357

358 Student:

359 Yeah... Yeah, sure. Um, especially if I thought that they were someone  
360 that could help me do better. I'd definitely do better. I'm like, some of  
361 my friends would be like, hey, like I didn't do really well on this exam.  
362 Could you help me to study? Encourage me to study, you know, if I'm  
363 gonna like, go in to [bar and shopping district near campus] and screw  
364 around instead of studying, they can say hey, like, just like remind me I  
365 need to study. I think the accountability is a really good thing.

366

367 Interviewer:

368 Okay. So in a sense it's kind of like low key asking for help?

369

370 Student:

371 Yeah. Yeah. Or like legit ask for help. Say, Hey, I didn't (laughs) do  
372 well on this exam. Will you like, help me learn this material, you know?



373

374 Interviewer:

375 So just straight up asking for help. (soft laugh)

376

377 Student:

378 Yeah. Yeah. (laughs)

379

380 Interviewer:

381 That's fair. Does it matter to you if your peers think you're smart and

382 does it matter like which peer we're talking about?

383

384 Student:

385 Um... I generally like for people to think I'm smart. I went to a really

386 small high school and I was seen by, most of my peers like one of the

387 smartest kids in my class, but then I come to college and I'm like, like

388 right in the middle. And so it's kind of, it's like a little bit different here

389 for me. And so it took like a little bit getting used to it. Like, oh, like I'm

390 not near the smartest person here anymore.

391

392 Interviewer:

393 Mhmm.

394

395 Student:

396 Um, you know, I'm not the best at anything by any metric. You know,

397 there's always gonna be someone better at this or at that. And so, I mean,

398 I, I enjoy it. I don't think it's a necessity as far as depending on who

399 thinks I'm smart, I think it can, it can definitely help you, um, people

400 will have more respect for you if they think you're intelligent and that

401 can help you throughout life. Um, teachers, they'll treat you better. You

402 know, like teachers have like favorite students too much, they said no,

403 but, and usually it's the smartest kid or the one that pays attention in

404 class, you know, one who answers questions, et Cetera, et cetera. So,

405

406 Interviewer:

407 Okay.

408

409 Student:

410 I think that it's important to me.

411

412 Interviewer:

413 So would you say that you care if your professors think you're smart

414 then?

415

416 Student:

417 Yeah. Yeah, but not as much. I mean if you intend on building a

418 personal relationship with the professor, I think that you need to

419 showcase your intelligence a little bit. Or like your character. I mean you

420 like get to know him and say hey this is valuable. You know, I can do

421 this. And then so maybe someday you could work in a research lab or

422 something with them because they'd be like, oh, like this person is

423 proficient at this, and this, and this. And so like they're a good candidate.

424 Um...

425

426 Interviewer:

427 okay. So to an extent it kind of matters more if they think you're smart,

428 if they have sort of a station of power over your future?

429

430 Student:

431 Right. Yeah, correct.

432

433 Interviewer:

434 Okay. What about people who are your equals? Do you care more if say

435 it's a friend thinking whether or not you're smart versus a stranger?

436

437 Student:

438 Um, friend versus stranger... actually... I think as far as my friends go, I  
439 appreciate it's like realms of smartness. I have some friends that are like  
440 business majors and of course they know like more about accounting  
441 and like finance than I do and I consider them like super smart and  
442 knowledgeable in that. So like if I have a question about like my Roth  
443 IRA or something, I'll go talk to them. Uh, if they have like a question  
444 for like one of the chemistry classes, they'll come talk to me. So I think  
445 it's important that they consider me smart in the area which I intend to  
446 be good at, which is Chemistry, Uh, Bio-chemistry, chemical  
447 engineering and then, but that's like as far as smartness in general, I  
448 think that for any functioning friendship, there needs to be a certain level  
449 like intellect equality, basically. Because people that are not near on the  
450 same intellectual level will likely not ever be friends. So there is an  
451 importance there. And as far as a stranger goes, I don't think it's really  
452 important that a stranger knows I'm intelligent, 'cause like interactions  
453 with strangers are pretty much limited. It's like, hey do you have a  
454 pencil? Can I borrow a piece of notebook paper? Hi, how are you? You  
455 know, so there, there's really not much of a chance there. I don't just say  
456 like, wow, like that person is really smart, nor does it really matter.

457

458 Interviewer:

459 That's fair. So tell me about what motivates you to pursue an  
460 engineering degree?

461

462 Student:

463 Um, well specifically chemical engineering.

464

465 Interviewer:

466 Mm-hmm (affirmative)  
467  
468 Student:  
469 I like chemistry, I like blowing things up. Lighting things on fire. So that  
470 kind of goes well...  
471  
472 Interviewer:  
473 That's fun.  
474  
475 Student:  
476 Yeah, all goes well together. Um, the money is definitely a perk.  
477 Chemical engineers make a lot of money, they don't have a real physical  
478 demanding job. I don't wanna be like a manual worker. Um, there's a  
479 refinery in my hometown so it's.... I'll always have the option to work  
480 there if I wanted. And those were all contributing factors to picking my  
481 specific engineering and engineering in general, I like problem solving,  
482 that's another contributing factor.  
483  
484 Interviewer:  
485 Okay. So you mentioned the refinery, was that just an example of a job  
486 you don't want?  
487  
488 Student:  
489 No, it's a job. That's an example of a job that I may want some day.  
490  
491 Interviewer:  
492 Oh, Okay.  
493  
494 Student:  
495 It's in my hometown and I could work there if I want to as a chemical  
496 engineer.

497  
498 Interviewer:  
499 Gotcha.  
500  
501 Student:  
502 Yeah.  
503  
504 Interviewer:  
505 Okay. Why do you think that those things motivate you?  
506  
507 Student:  
508 Um, well the money for obvious reasons.  
509  
510 Interviewer:  
511 Everybody's got to eat?  
512  
513 Student:  
514 Yeah. (laughs) And the refinery in my hometown, because I have the  
515 option to stay close to my family and friends if I want to. I can live  
516 there, work there, have a good job, and have a family. Um, the problem  
517 solving, everyone should always try to do something that they enjoy and  
518 I enjoy chemistry, I enjoy problem solving. Chemical engineering kind  
519 of meshes those fields. And... Yeah.  
520  
521 Interviewer:  
522 Okay. So what is it about problem solving that attracts you?  
523  
524 Student:  
525 I don't really know, it's just you get an enjoyment out of looking at a  
526 problem and then figuring out a solution. Like there's no specific reason  
527 why I like it, you know?

528

529 Interviewer:

530 So it's just pleasurable in itself.

531

532 Student:

533 Yeah.

534

535 Interviewer:

536 Okay. If I asked you to make a pie chart of your motivations to study  
537 and learn and all that, what percent would you say you're motivated by  
538 the grade you get at the end versus the knowledge you acquire as you  
539 go?

540

541 Student:

542 I say 50 50. Um, the grades, are important but not completely important  
543 because then I keep my scholarship, I don't get to pay for college. So I  
544 gotta keep a 3.5 split of half As Half Bs. Um, but I don't really don't  
545 think that the grade is a representative of mastering a subject. I mean  
546 someone can get a low grade, and still have a previous understanding of  
547 a subject as far as I've seen them understand. So, um, yeah, I don't know,  
548 maybe even 60 40 as far as understanding... understanding being 60 and  
549 the grade being 40 and I think understanding is more important, but you  
550 still have to keep the grades go to college and the GPA is often the  
551 deciding factor for a job entry someday. So you know, they hire  
552 someone with a 3.8 over 3.6 or 3.5 and it shows good... Good grades  
553 show, good work ethic.

554

555 Student:

556 I mean a lot of people say this, that's why you go to college, because...  
557 because You show your ability to learn and people look at your GPA  
558 and say like this person had a great ability to learn. And even as far as

559 chemical engineering goes, a lot of the stuff that we learn we won't, we  
560 won't ever use because there's um, there's computer programs, they'll do  
561 it for us. And it's just showing our ability to do it even though we don't  
562 actually need it.

563

564 Interviewer:

565 Okay. Is that percentage probably the same for all of your classes or no?

566

567 Student:

568 Um, some definitely more... more than others. I mean some classes I'll  
569 tell you are like you'll hear you'll never do this and then so you just need  
570 to grow and you'll need the understanding and then some classes they'll  
571 be like this is important, you need to understand this, you'll use it in your  
572 industry. And then so then of course it shifted to, you need to understand  
573 it and the grades is just a helpful side effect of that understanding.

574

575 Interviewer:

576 Okay. So can you give me an example of each kind of class?

577

578 Student:

579 Yeah, sure. So my [chemistry class], we talk about like a lot of processes  
580 and stuff that I will use in the industry someday and reactions and we  
581 learn lab skills that I could actually use and then, [calculus class] is more  
582 on the... Of the useless variety (laughs) because we will have programs  
583 and computers and calculators that can do it all for us, when in our  
584 exams we're doing it by hand and when, yeah, you can do it and that's a  
585 fraction of the time with an online calculator or graphing calculator. So  
586 even though it's kind of important to understand like how to do it, you  
587 don't need to.

588

589 Interviewer:

590 Okay. So in what ways are your grades important to you?

591

592 Student:

593 Um... (silence)

594

595 Interviewer:

596 You met, you mentioned like hirability and GPA and scholarships. Is

597 that all of it or is there anything else?

598

599 Student:

600 Yeah, I mean that's, most of it. If grades weren't a thing, and I didn't

601 have to keep A's like from my scholarships and in the blue to go to

602 college. Uh, you know, obviously you won't have to worry about it, but

603 then you can just like strive for understanding and not just understanding

604 in general and uh, the specific test. Because like for specific tests you'll

605 be like, this is on the test and like you need to study this. And that's

606 usually because the teacher thinks that hey, this to what you're going to

607 need to know. But it's not often comprehensive of the course, like they

608 teach you, but a lot of the summer tests on a lot of times I'll think that...

609 that's because that's what you're going to use. But who's to say that's

610 right. And you can just get like a broader understanding of everything if

611 you weren't too focused on grades.

612

613 Interviewer:

614 Okay. So potentially in a grades don't matter world you might even

615 understand things better.

616

617 Student:

618 Yeah, for sure.

619

620 Interviewer:



621 All right. In what ways is learning the material important to you?  
622  
623 Student:  
624 Um, in the way that I'm gonna need it, I need to learn it because I'm  
625 gonna need it. Principle, clean cut.  
626  
627 Interviewer:  
628 So it's utility?  
629  
630 Student:  
631 Yeah, for sure.  
632  
633 Interviewer:  
634 Okay.  
635  
636 Student:  
637 And just like the joy of learning, I enjoy learning and knowing things.  
638  
639 Interviewer:  
640 (laughs) It's fun?  
641  
642 Student:  
643 Yes.  
644  
645 Interviewer:  
646 Yeah. That's always fun.  
647  
648 Student:  
649 Okay.  
650  
651 Interviewer:

652 So let's say you're enrolling in classes for next semester and there's this  
653 one class that you need to take probably required for your major and you  
654 realize, oh, there's two sections you could enroll and they both work for  
655 your schedule, but they're taught by different teachers. So maybe you've  
656 taken a class with the teachers before. Maybe you only know them by  
657 reputation, but you know that if you take professor A's class, you're  
658 going to have to spend a lot of effort to get a good grade in that class.  
659 You're going to have to work your butt off. But you know that you'll  
660 come out understanding a lot and learning a lot. Professor B, you know  
661 that you probably only have to put half as much effort to get a good  
662 grade, but you might not learn as much in the class. Which one do you  
663 enroll in?

664

665 Student:

666 Difficult question. It depends on my workload. It depends on my other  
667 classes. If my other classes are gonna be hard I may have to put on a  
668 little more work in I'm going to pick the easier professor. If I have some  
669 easier classes, and the class is something that I know need to know to  
670 pick the harder professor. Um, it depends on how many hours of this. If  
671 it's, if it's a tough class that's like a five hour lab class. I'm going to pick  
672 the easier professor just to get my GPA, can't take the beat and then  
673 that'll give me more leeway to keep my scholarship. So, I mean there's a  
674 multitude of factors that go into that. Like, like if there's, okay you're  
675 like five hour lab and they were really tough professor is, is has a  
676 reputation as a tough class and then you to memorize a lot of stuff to be  
677 successful. I'd probably pick the easier professor just because A is a  
678 memorization and B, if I got a B in a five hour class I would just wreck  
679 my GPA.

680

681 Interviewer:

682 Noted. So it, it's really kind of, you have to weigh everything else going

683 into it?

684

685 Student:

686 Yeah.

687

688 Interviewer:

689 Okay. Can you think of a situation where your answer might change?

690

691 Student:

692 Um, I think my answer would change based on-on the extremes, or the  
693 reputation on the professor. Like if you have like, it's like a world class  
694 professor and you know, like the classes are going to be tough and, but  
695 you have learned so, so, so much. Then you might take the class anyway  
696 just because you know, the professor is so good. So yeah, that would  
697 definitely change it. I mean, [Chemistry class] I had [instructor] and he's  
698 one of the best teachers I've ever had, and he's a university distinguished  
699 professor. He deserved it, you know, because I got a B, and it was tough,  
700 but I learned a lot. And, He's fun, you know, fun, fun having class you'd  
701 like, you want to pay attention. So I'd most definitely want to take a  
702 class with him again, even though it's difficult.

703

704 Interviewer:

705 Okay. Tell me about your learning and studying strategies?

706

707 Student:

708 Um, learning, I pay attention in class. I take notes, write stuff and I  
709 remember it. To study, I like to go over previous assignments, past tests,  
710 study in a group. So, if I don't understand something someone else most  
711 likely does. Um... work practice problems, I learn by doing the best. So  
712 I'll just run practice problems over and over and over. And other times I  
713 can do it like completely on my own I now know.

714

715 Interviewer:

716 Okay. How have you come to use your strategies?

717

718 Student:

719 It took a while. I mean like all through high school and like middle

720 school, like teachers teach like different ways and some teach like one

721 learning style and some pretty much like diversify. So it's easier for

722 everyone to find. And then you have to just know like maybe in like an

723 elementary school, you know, I try to like listen to things and learn to

724 and that just like didn't work so well or I try to read things to learn it.

725 And that didn't work so well and I figured out like I'm a doer you, I'm

726 like hands on, I got to like solve it and do it myself and then I can learn

727 it a lot better than just listening to the teacher. So it's like how it came

728 about. It's like a process as I went through elementary, middle school,

729 high school, and it's like more fun too.

730

731 Interviewer:

732 so it's still just a learning experience.

733

734 Student:

735 Yeah. Yeah.

736

737 Interviewer:

738 How have your strategies changed over time?

739

740 Student:

741 Um, I used to kind of still do things that were slightly ineffective but

742 still worked and now it's kind of eliminate them completely and focus on

743 just the best meth... just the best methods because I don't have time to

744 waste, you know, I'd rather do other things. So yeah, just hands on. And

745 then the third, like a study strategy or someone's like, Hey, want to do  
746 this type of studying or whatever, do you want to join? I'll be like, no, no  
747 thanks. Even though maybe I could get stuff done, I could definitely  
748 more if I did another way on my own time.

749

750 Interviewer:

751 Okay. So did you find that you had a significant jump in how much you  
752 needed to study when you came to college?

753

754 Student:

755 Yeah, for sure. I didn't study at all in high school I studied...

756

757 Interviewer:

758 (laughs)

759

760 Student:

761 I studied like maybe like maybe a two or three hours for the ACT  
762 (laughs) and that's it. I'm like, yeah, none. None besides that. Um, but  
763 yeah, uh, my first, my first experience with studying in college, like, I  
764 mean, I guess in high school kinda considered studying like in class, like  
765 like taking notes and stuff, study. But now it really could show that  
766 study. Nice. Consider that like middle, like you need to do that. That's  
767 not really studying, that's just like the learning... Learning part of it. But  
768 ...

769

770 Student:

771 okay. So that's just step one, but there's a whole bunch of more steps?

772

773 Student:

774 Yes. Yeah.

775

776 Interviewer:

777 How did you feel when you realized, oh crap, I need a study a lot?

778 (laughs)

779

780 Student:

781 Um, well it kinda sucked honestly because it's like then again, I wasn't

782 as smart as I thought it was at least compared to everybody else. But

783 hey, it's all like also like this is a challenge you know it's finally

784 something and I can like, sink my teeth into and like work on you know

785 like... before it's like, you know the tips and stuff and you just get it and

786 it's enjoyable having a challenge to overcome. Like another thing on this

787 one came to college is that people ask good questions. Like, cause like

788 in high school someone asked this question and be like, come on, like

789 can't you to see, like be like this is the right answer. And now people ask

790 questions, you're like, hmm, how low, you know, it's all like, that was

791 like a good question. I think that's cool. I was like, like the the challenge

792 to learn. That's all.

793

794 Interviewer:

795 So might you even say that the fact that you need to study has become

796 meaningful?

797

798 Student:

799 Yeah, yeah, for sure.

800

801 Interviewer:

802 Okay. So annoying at first, but overall good?

803

804 Student:

805 Yeah.

806

807 Interviewer:

808 In general, how much effort would you say that you put into your  
809 classes?

810

811 Student:

812 Um, as much as I need to. Uh, I know that was kind of ambiguous  
813 answer, but as much as I need to for the A or for my understanding.

814

815 Interviewer:

816 So varies the class then?

817

818 Student:

819 Yeah, for sure. If I don't understand then I'll put in more effort. If I don't  
820 have the grade I want, I put in more effort just as much as I need to, and  
821 sometimes more, if I enjoy it. It's a lot easier to put effort into class you  
822 enjoy or like that has a good professor.

823

824 Interviewer:

825 naturally. So do you feel like you put more or less effort compared to  
826 your peers?

827

828 Student:

829 Um, more than some. Less than others. I feel like less generally because  
830 I'm more effective and my effort. So like, yeah, that's going to appear  
831 that I took more effort, but really I was just more effective in what I did.  
832 Like my study methods.

833

834 Interviewer:

835 Okay. So if say it might seem like you're putting in less effort, but you're  
836 just maximizing the...

837

838 Student:  
839 Yeah, the time.  
840  
841 Interviewer:  
842 ...Learning you get out of how you study?  
843  
844 Student:  
845 For sure. Because like you'll study and not get sidetracked. And not  
846 screw around. You know, It can take you like two hours to study and  
847 then there's a study group that he likes to go around and get derailed  
848 every 10 minutes and go like a down a Wikipedia rabbit hole (laughs) or  
849 something and it can take them a lot longer to study the same material  
850 about the same stuff. So that's my focus.  
851  
852 Interviewer:  
853 You're, you're the sort who would spend the two hours of studying and  
854 then go down to Wikipedia hole.  
855  
856 Student:  
857 Oh, Yeah. Yeah. (laughs)  
858  
859 Interviewer:  
860 Now that you don't need to worry about it anymore. All right. (laughs)  
861 Do you feel like you learn more from a class that you have to put more  
862 effort into?  
863  
864 Student:  
865 Not necessarily, no. Um,  
866  
867 Interviewer:  
868 Can you elaborate on that?



869  
870 Student:  
871 Yeah, I mean there're some classes that you can put in a lot of effort and  
872 not learn anything. It's just tough stuff and you like... You Study right  
873 before the exams and know the stuff. They don't actually ever long term  
874 learn it because it's just so hard that there's so much material. You can't  
875 just like learn it all. And you like... you like cram the night before and  
876 you know the equations and you know how to do it for the exam and  
877 after the exam it's gone.

878  
879 Interviewer:  
880 Okay. So what about classes that you have to put less effort into?

881  
882 Student:  
883 I think generally you learn less. I think... I think there's a happy medium.  
884 I think, more effort is generally associated with learning more until you  
885 get to an extreme.

886  
887 Interviewer:  
888 Okay. So let's just kind of a threshold thing?

889  
890 Student:  
891 Yeah.

892  
893 Interviewer:  
894 And, Too little. Yeah. And you're not learning anything but too much,  
895 you're just drowning?

896  
897 Student:  
898 Yeah, exactly.

899

900 Interviewer:

901 Okay.

902

903 Student:

904 And of course the threshold is different for different people. Um, it  
905 seems here at K-State, the professors they like to teach up... they'll teach  
906 almost as fast as the fastest person can learn. That's how everyone else is  
907 like trying to reach the smartest person in the class. And I enjoy that.

908

909 Interviewer:

910 Okay. Now think of a subject or a class that you had to put in a lot of  
911 effort to succeed and tell me about it.

912

913 Student:

914 mm, I devoted a lot of effort and hours in [chemistry class] lab because  
915 our lab reports can be so time consuming and I'll take, 8 hours a report  
916 to write and I enjoyed it. You know, Lab reports maybe suck, but you  
917 learn, you learn about the lab process and what it means. Um, um, yeah.  
918 The lab itself is really fun and sometimes you already know, they're like,  
919 oh, I understand this process, I understand this lab. And it's like, why do  
920 I have to write this report? But then other times you don't understand it  
921 at all and the report really helps you to get an understanding. So  
922 sometimes that amount of effort was useful on a lab by lab basis and  
923 sometimes it wasn't.

924

925 Interviewer:

926 Okay. How do you feel about the amount of effort and time you needed  
927 to put into that course?

928

929 Student:

930 It sucked (laughs) really did. There's other things I would have much

931 rather been doing but I learn a lot. So it's worth it probably.

932

933 Interviewer:

934 Okay. So what did you get out of that experience?

935

936 Student:

937 I gained lab experience, I gained, the ability to write a very solid lab

938 report. There's this guy, watch me write my lab report and be like

939 walked by. He's like, is that a textbook? what textbook is that?. And I'm

940 like, that's my lab report. You know? So I think that's uh, that's a

941 valuable skill.

942

943 Interviewer:

944 Okay. Now think of another subject or class that you didn't actually need

945 to put a lot of effort into just succeed. Tell me about that?

946

947 Student:

948 That'd be public speaking. Last semester, um...

949

950 Interviewer:

951 I remember that class. (laughs)

952

953 Student:

954 Yeah. Yeah. I didn't... I barely put any effort into that because I uh, was

955 on a speech and debate team in high school and so I have a lot of

956 speaking experience and so it was naturally easy for me compared to all

957 other people.

958

959 Interviewer:

960 Okay. And how did you feel about the general lack of effort needed?

961

962 Student:

963 I'd feel like the class was entirely unnecessary because I didn't need to  
964 put any effort because I already knew everything and perhaps even knew  
965 more than what they were teaching. So it's like, why am I here? You sit  
966 there and um, I also felt like since I was already pretty well versed in the  
967 subject, they taught a lot of things that didn't need to be taught. They  
968 taught a lot more speech theory than speaking actually. So they taught  
969 even engineers on things, how you should speak, but not how to speak. I  
970 mean, sure, we had speeches where you had to stand up but then a lot of  
971 the class time, but like this is how you should do this, and this is how  
972 you should do this when a lot more should have been doing it.

973

974 Interviewer:

975 Okay. So you felt like it needed more practice than....

976

977 Student:

978 Yeah.

979

980 Interviewer:

981 Okay.

982

983 Student:

984 Yeah.

985

986 Interviewer:

987 Do you think there were any students in that classroom which your last  
988 one is actually helpful?

989

990 Student:

991 Um, I think... I think it was a little bit helpful for some for sure. Because  
992 from the first, the very first speech, two our third speech, I mean

993 everyone had improved a little bit, but not as much as I would've  
994 expected for public speaking class. And that's where I think that the  
995 more speech practitioner came in because they didn't improve as much  
996 as you know, they're, they're all worse speakers than anyone in my  
997 speaking team in high school. And you know, we had the year of high  
998 school speech and you know, this was a college speech class. Like the,  
999 the level of difficulty, shot a lot higher than it was.

1000

1001 Interviewer:

1002 Okay. What did you get out of that experience?

1003

1004 Student:

1005 Um, I got... not much out of it. I realized like hey, there's some stuff I  
1006 know... Some stuff I don't need to study.

1007

1008 Interviewer:

1009 So you basically got a mark on your DARS report? (laughs)

1010

1011 Student:

1012 Yeah. Yeah. (laughs)

1013

1014 Interviewer:

1015 Okay. Think about a student, you know, and specifically one who  
1016 succeeds, but they always have to put in a lot of effort to do it. They're  
1017 all is working their butt off every time you see them? What does that tell  
1018 you about how smart they are?

1019

1020 Student:

1021 Um, they're just, their smartness is shifting towards like the working  
1022 hard side of it. Like sure like they're smart... but just, they're smart, but  
1023 not as actively smart. Yeah. Like there's this girl in my lab that gets like

1024 five hours of sleep every night because she studies and studies and  
1025 studies. She takes meticulous notes and she gets this stuff really, really  
1026 well, you know, yeah, so she is seems smart. But she's not as actually  
1027 smart because she has to study, but down the road she would maybe  
1028 appear naturally smarter because she has a really good understanding on  
1029 the stuff we're learning now because she's studied so hard.

1030

1031 Interviewer:

1032 Okay. So she's not, maybe her smartness is less and uh, the subject  
1033 matter and more in self-discipline, is that what you're saying?

1034

1035 Student:

1036 I guess you can be smart in how you discipline yourself. Um, well, I  
1037 won't, I won't say that smartness is reliant on self... Self-discipline.

1038

1039 Interviewer:

1040 Okay. So she's not dumb. She's just not as smart as maybe the rest of the  
1041 class?

1042

1043 Student:

1044 Yeah.

1045

1046 Interviewer:

1047 Okay. Now think about another student, you know who doesn't put in a  
1048 lot of effort, but is doing pretty well anyway. What does that tell you  
1049 about smart that person is?

1050

1051 Student:

1052 I'd say they are also as smart, probably just as smart as the other person,  
1053 but the, the person that I'm thinking about is they had four years in the  
1054 country in high school, so more likely her... Perhaps they had to put in a

1055 ton of work in high school and now they don't have to because they  
1056 already did. And so that, that can be part of it. And also, you know, just  
1057 like natural intelligence, like higher IQ. There's like naturally smart.  
1058 mm. Yeah. Like I said it's, it's really hard to tell whether they did put in  
1059 a lot of effort previously or they're just naturally smart. It's, it's a hard,  
1060 hard thing to decide if someone is actually smarter than they were  
1061 previously or are they studying a lot, you know.

1062

1063 Interviewer:

1064 Okay. Tell me about a time when you received feedback that you  
1065 weren't performing expectation. It could be a class, it could be a job, it,  
1066 it...whatever.

1067

1068 Student:

1069 Um, so yeah, we had a project in our chemical engineering intro class  
1070 and we were like supposed to make and present this project. And at the  
1071 end of the project we were supposed to give feedback on each other and  
1072 our group, we made a pact to be brutal and (laughs) give completely  
1073 honest feedback. And you know, like my group member, like they  
1074 really, they really ripped into me and like I ripped into them too. So it's  
1075 fair. And I got some good feedback and they basically said that, um,  
1076 even if I get my part done, like you need to like keep on working. They  
1077 thought that even though you felt like divvy it up into quarters and then  
1078 like you just do your part, they thought that even after you get your part  
1079 done, like the project's not done. So it's like keep on going. And I was  
1080 more in favor of like, Hey, like let's just split it into quarters. I'll do my  
1081 part, you guys do your part. And they just kinda like wanted to do it  
1082 holistically. So they're like aggravated about that. But I don't know how  
1083 fair that was. And then also they, they didn't think that I did my share of  
1084 work. They're like, you didn't even do 25%, but then they neglected the,  
1085 editing duty. Like they did like all their like sections that like we

1086 assigned and I went back and I edit them and you're like printed the area,  
1087 like made it make sense. And so I think a lot of that was attributed to  
1088 bad communication and just everyone didn't want to do as much as they  
1089 did and one of the people do more because the project in itself wasn't  
1090 that much fun. So I don't know, just kind of like aggravated that they  
1091 had to do so much, which is fair. Um, yeah.

1092

1093 Interviewer:

1094 Okay. So you would say that part of the feedback was maybe inaccurate,  
1095 but...

1096

1097 Student:

1098 Yeah. Yeah. Um...

1099

1100 Interviewer:

1101 What about, do you think any of it was actually something you can  
1102 needed to improve upon?

1103

1104 Student:

1105 I know, well this is like a different standard. I know that a lot of people  
1106 said that like in high school and group projects I got like sidetracked and  
1107 derailed and stuff and that, that has been something that I've worked on.

1108 You know, like I said like now I can like sit down and just tell you

1109 without doing like going through like rabbit holes and get distracted.

1110 And that was something that I didn't used to be good at all. But now if I

1111 have to, I can, I mean maybe if we're like two weeks out from an exam,

1112 you know, we're like studying. Yeah. Looks around. But then it comes

1113 down to it like, yeah, I can sit there and just study. If I need to, so that in

1114 the past that's been some feedback, hey, I got something I've changed. Is

1115 that just like a switching, switching like alright, this is just studying time

1116 and you have to be able to do that.



1117  
1118 Interviewer:  
1119 Okay. Both that the study focus and the group thing.  
1120  
1121 Student:  
1122 Yeah.  
1123  
1124 Interviewer:  
1125 How did you respond to the feedback you got?  
1126  
1127 Student:  
1128 Um, I like feedback, I love feedback. I'll ask, people I know like, Hey,  
1129 what can I do better? What am I doing wrong? And this... this Is a... It's  
1130 a gradual process of self-improvement. You need to, you need to know  
1131 what you're, you're doing badly and how others perceive you in order to  
1132 become better. So it's a necessary process and sometimes it sucks a little  
1133 bit, but I mean in the end it's kind of, yeah.  
1134  
1135 Interviewer:  
1136 Okay.  
1137  
1138 Student:  
1139 I think more people should give honest feedback more often.  
1140  
1141 Interviewer:  
1142 Okay. So you were glad to have it?  
1143  
1144 Student:  
1145 Yes.  
1146  
1147 Interviewer:

1148 Did you take any action as a result of the feedback you got?

1149

1150 Student:

1151 Um, always. Um, I think especially with the, like in high school, like the  
1152 focus thing, I realized that like, so like right away, like yeah I've derailed  
1153 our conversations or artery project and we could have gotten done so  
1154 much sooner and so much more effectively. And so I changed, you  
1155 know, like now I can realize like, hey, we need to work on this. And it  
1156 was like cut everything else out. And so that, that's like a big change I  
1157 made. So yeah, a lot of times you do need to take action and change, but  
1158 sometimes also you need to be like, no, you know, like, I don't think that  
1159 that's something I need to change, it's the, it depends on what it is.

1160

1161 Interviewer:

1162 Okay. So you evaluate the response that the feedback and respond based  
1163 on your evaluation.

1164

1165 Student:

1166 Yeah. Or I mean you can even go and double check say, Hey, like this  
1167 group of people said that I need to work on this. And then you go to  
1168 someone else that knows you pretty well, say hey, like do you think, and  
1169 they'd be like, yeah. Like, (laughs) come on dude. Like, I can't believe  
1170 you haven't noticed those already, but yeah.

1171

1172 Interviewer:

1173 Okay. So maybe even ask for a second opinion.

1174

1175 Student:

1176 Yeah. Yeah.

1177

1178 Interviewer:

1179 Okay. What has been the outcome of your, you know, uh, evaluation in  
1180 response to feedback?

1181

1182 Student:

1183 It's made me a better team member. It's... made me a better person in  
1184 general. Then, pretty good outcome.

1185

1186 Interviewer:

1187 Okay. Have you learned anything from that sort of experience?

1188

1189 Student:

1190 Yeah, I learned the value of honest feedback and how aggravated people  
1191 can be when you give them honest feedback, because it seems to me that  
1192 some people don't understand the value basically like the emotional side,  
1193 they see it like an emotional attack. So sometimes you have to be  
1194 careful, like you can obviously give a lot more honest than harsh  
1195 feedback to someone you know. Well, because there'll be a-able to say...  
1196 They'll be able to see that you aren't just doing it from an emotional side.  
1197 There'll be able to see that there's something they actually need to work  
1198 on. But then if you don't know someone as well, then of course you are,  
1199 and to give them, you're not going to rip them apart because they most  
1200 likely won't even take that feedback into consideration. They don't know  
1201 you.

1202

1203 Interviewer:

1204 Okay. In that case, do you also think it kind of matters how you give  
1205 feedback?

1206

1207 Student:

1208 Yeah, I mean, yeah. And it depends on the person on how you give  
1209 feedback to. People different personality types. And of course you have

1210 to cater to that.

1211

1212 Interviewer:

1213 Okay. So what advice would you give to someone who's struggling with  
1214 feedback like you received?

1215

1216 Student:

1217 Um... same thing. They're struggling with always being distracted  
1218 because hey, that's feedback, that's good feedback and you need to... you  
1219 need a change and be able to focus more on projects out of can. And it  
1220 worked for me. So it should work for them too.

1221

1222 Interviewer:

1223 Okay. Do you care if your peers judge you when you do poorly?

1224

1225 Student:

1226 Yeah, I do. I mean I don't like it but also it can be a good thing cause  
1227 like I said, they'll judge me and then they're gonna be like holding me  
1228 accountable and if they're, you know, good friends, people I know, then  
1229 they'll encourage me to do better.

1230

1231 Interviewer:

1232 Okay.

1233

1234 Student:

1235 So, yeah I think a certain amount of judging is definitely necessary even  
1236 though that kind of sucks, but you know.

1237

1238 Interviewer:

1239 So you care, but it's not completely bad. Right. What about your  
1240 professors? You care if they judge you when you do poorly?

1241  
1242 Student:  
1243 Um, yeah. I would a little bit. I mean I think I'd have to do extremely  
1244 poorly for them to judge me because they've seen a lot of kids. They're  
1245 seeing a lot of kids do poorly. And so if your professor's judging you for  
1246 doing poorly, you did something wrong because that means that you did  
1247 more poorly than any other poor person they've seen.  
1248  
1249 Interviewer:  
1250 (laughs) So it's a valuable feedback.  
1251  
1252 Student:  
1253 Yeah.  
1254  
1255 Interviewer:  
1256 And it sucks but it's necessary. Okay.  
1257  
1258 Student:  
1259 Yeah.  
1260  
1261 Interviewer:  
1262 Do you do...  
1263  
1264 Student:  
1265 It's like the professors... they have a wide range, a wide scope, you know  
1266 this, I've seen a lot of people.  
1267  
1268 Interviewer:  
1269 Sure.  
1270  
1271 Student:

1272 And so they have a lot, a lot of history and a lot of knowledge support  
1273 from when they give me feedback or judge you.

1274

1275 Interviewer:

1276 Okay. So I guess judgment is just a sort of motivation in a way to do  
1277 better.

1278

1279 Student:

1280 Hmm. For me, and it's.... it's.... A lot of people don't see it like that, but  
1281 if you do look at like that you can use it as like a tool to make yourself  
1282 better. You just got to remove the emotional aspect and see like the root  
1283 of it. Like there definitely coming from this as something I can improve  
1284 on.

1285

1286 Interviewer:

1287 Okay. Do you ever think of like a separation between, a judge... a  
1288 judgment where you observe that someone's doing poorly and judgment  
1289 where you see it and look down on them?

1290

1291 Student:

1292 I try never to see someone and look down on them like 'cause like you  
1293 never know like what they're going through, you know? You never  
1294 know. Of course sometimes it's their fault. Like they just didn't study,  
1295 and so then they go and they judge you, and you know that's like a dumb  
1296 decision. But I mean you never know. So you can't really, you can't at  
1297 least I think that you shouldn't or can't judge people. I mean just  
1298 instantly you're heard correctly, you know, just from the like a first  
1299 glance because you don't know. But then also there's a certain extent of  
1300 judging that needs to be done. Say, okay, like why didn't you do this?  
1301 How many of you like talk to them and say, yeah, it's important.

1302

1303 Interviewer:

1304 Yeah. So would your, whether or not you care change based on whether  
1305 it was simply someone telling you, hey, you're not doing so well, you  
1306 need to step it up versus actually looking down on you?

1307

1308 Student:

1309 Well, I would hope that I would take it both the same way. I would hope  
1310 I would be able to like if someone like looks down on me, say, I'd be  
1311 able to see I'm not doing as well as I should be, which that's exactly  
1312 what the other person is telling me is, hey, you're not doing as well as  
1313 you should. I mean, I would hope that I would be able to see it the same  
1314 way and not get up in arms about it. But honestly that sometimes it's not  
1315 the case and your emotions get the way you get fired up. Like hey!

1316

1317 Interviewer:

1318 Emotions. (laughs) So do you think you learn more from experience  
1319 that's challenging or not very challenging?

1320

1321 Student:

1322 I'd say challenging. Yeah, challenging but not necessarily. I mean there's  
1323 always...

1324

1325 Interviewer:

1326 Can you elaborate?

1327

1328 Student:

1329 So usually if something is challenging, we don't know how to do it. And  
1330 so that's where like the learning comes in and when you don't know how  
1331 to do something that's challenging, you learn. But also there could be  
1332 something that you're just naturally good at it, you're still going to learn  
1333 from and it's not that challenging, but you're still learn. So I'd say that

1334 most of the time you learn the most from something that's challenging,  
1335 but not always.

1336

1337 Interviewer:

1338 Okay. Does it matter whether you succeed or not during a challenging  
1339 experience that you learn a lot from?

1340

1341 Student:

1342 It's me In particular?

1343

1344 Interviewer:

1345 Mm-hmm. (affirmative)

1346

1347 Student:

1348 Yeah. Yeah. To me it matters like... I like to succeed. Most people want  
1349 to succeed. Um, it doesn't matter that much, I mean, as long as I learned,  
1350 it's kind of like put the grade thing, like you succeed in getting A, but if  
1351 you get like a C and you still learn a lot, like it's okay, but know still  
1352 matters.

1353

1354 Interviewer:

1355 So, it matters just not quite as much as the learning, is what you're  
1356 telling me?

1357

1358 Student:

1359 Yeah, Yeah. I'd say so.

1360

1361 Interviewer:

1362 Okay. Can you think of a situation where it might not matter if you  
1363 actually succeeded?

1364



1365 Student:  
1366 If just the goal of the project was just learning not success then. Yeah.  
1367 Did you find a situation where like literal goal is just to learn and not  
1368 succeed? Like, um, it's like the star trek example.  
1369  
1370 Interviewer:  
1371 Yeah, the unwinnable...  
1372  
1373 Student:  
1374 It's like the, the... the unwinnable situation.  
1375  
1376 Interviewer:  
1377 The unbeatable test.  
1378  
1379 Student:  
1380 Yes. Yeah, exactly. Yeah.  
1381  
1382 Interviewer:  
1383 And then he completed it by hacking it.  
1384  
1385 Student:  
1386 Yeah, Yeah... and he reprograms it and wins and so it's get something  
1387 like that where you aren't meant to succeed and just to learn that. Yeah,  
1388 it's a lot more valuable just to learn and be able to take it and realize that,  
1389 yeah, something's are not winnable.  
1390  
1391 Interviewer:  
1392 Okay. I had a question on this, what was I going to ask you.... Do you  
1393 ever put a lot of effort into something but perceive it as less challenging  
1394 simply because you enjoy it?  
1395

1396 Student:

1397 Yeah, for sure. Um, anything that you enjoy, that is really challenging  
1398 you just perceive as less challenging because it's fun.

1399

1400 Interviewer:

1401 Do you still think it technically counted as challenging? When you just  
1402 didn't notice the challenge?

1403

1404 Student:

1405 Yeah. I guess, and that's... That's enjoyable. When you do it, you get a  
1406 lot of work done and solve some really difficult problems and overcome  
1407 some really challenges, really big challenges that you enjoy...

1408

1409 Interviewer:

1410 And then it just... wouldn't feel as challenging as it perhaps really was?

1411

1412 Student:

1413 Yeah. That's good.

1414

1415 Interviewer:

1416 Okay. Now that we've talked through all these different ideas related to  
1417 motivation and effort and challenges, how would you summarize what  
1418 you've shared with me?

1419

1420 Student:

1421 (exhale) Um, I would summarize by saying I put in as much effort as is  
1422 needed and a lot of fact... Of factors affect that. Um, I am motivated by  
1423 how much I need to succeed. Pretty much self, self-motivated. If I need  
1424 to succeed I will just motivate myself more. Just motivation, and um...  
1425 yeah...

1426

1427 Interviewer:  
1428 Effort and challenges?  
1429  
1430 Student:  
1431 And challenges and I like to overcome challenges. Challenges are  
1432 definitely easier to overcome if you enjoy them. The challenges are still  
1433 valuable even if you don't necessarily succeed because of what you  
1434 learned.  
1435  
1436 Interviewer:  
1437 Okay. Do you think you gained any insights from our discussion?  
1438  
1439 Student:  
1440 Um, I guess I thought about some stuff I haven't really thought about in  
1441 a while. I didn't really gain anything. It just kind of brought into the  
1442 front.  
1443  
1444 Interviewer:  
1445 Could you elaborate?  
1446  
1447 Student:  
1448 Um, hadn't really thought about how I might be. I might be putting just  
1449 as much effort into some things that I enjoy, some challenges I enjoy as  
1450 things I don't enjoy it and it doesn't seem like I am because I enjoy it. I  
1451 haven't really like thought about that. Good point.  
1452  
1453 Interviewer:  
1454 Okay. Do you have anything else you'd like to share with me?  
1455  
1456 Student:  
1457 I don't think so, no.

1458

1459 Interviewer:

1460 Great. Thank you very much.

## Appendix B - Interview Protocols

### First Interview Protocol

**Interview Number:**

**Pseudonym:**

**Date:**

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#### Logistics

Hello! Thank you for volunteering to participate in this interview. First I want to let you know what to expect.

- Our conversation will be **recorded** and then transcribed verbatim. This allows me to revisit what was said accurately and eliminates the need to take notes frantically. Any **identifying information will be removed** from the transcript and the audio will be kept in a secured location.
- Your name will be replaced with a pseudonym--do you have a preferred **pseudonym** (for next letter)?
- I may take some notes along the way, so that I can keep track of things to follow up on without interrupting you.
- The interview should be about an hour and is completely voluntary—you can stop at anytime.
- You will receive the \$25 at the end of our discussion.
- Do you have any questions for me before we begin? [Answer, start recorder]

#### Purpose

- Our goal today is for us to have a detailed discussion about your **beliefs about or perceptions of the nature of your intelligence**.
- The discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience and how it can be improved for all students.
- I want to hear your own beliefs—I am expecting that they will be different from the beliefs of others—there is **no right or wrong answer**.
- I aim to understand your perspective, so I will ask questions like “what do you mean by that?” These types of questions can be a bit awkward and may require you to reflect on what you’ve experienced, so I will purposefully leave long pauses after my questions. Take your time—if you need clarification, please let me know.

*Throughout interview, remember:*

- *Respond with “that’s interesting” rather than “that’s good”*
- *Use “tell me more about that,” “you used the word X, what do you mean by that?”*
- *Make connections, “why do you think that’s important in terms of intelligence?”*

## **Interview Questions**

### Goals/Motivation

- 1) Tell me about a specific time in engineering school when you felt smart.
  - a) What about that experience made you feel smart?
- 2) What are your favorite things to work on in engineering school?
  - a) Things that come easily?
  - b) Things that are challenging?
- 3) If you scored high on an exam, how would you react? Why?

- a) What could a professor do to motivate you to continue to do well?
- 4) If you scored low on an exam, how would you react? Why?
  - a) What could a professor do to motivate you if you had done poorly?
  - b) What if other students did much better than you?
- 5) Tell me about a specific part of engineering school that made/makes you feel motivated to keep pursuing an engineering degree.
  - a) Why do you think it was motivating to you?

Beliefs about Effort

- 6) On a scale of 1-10 (10 being the smartest), how would you rate your intelligence as an engineering student?
- 7) Tell me about an experience that convinced you of this...
  - a) Why was that experience important to you?
  - b) What would you have to do to move up on the scale?
- 8) Tell me about your strategies to be a good engineering student
  - a) Where do you think these strategies come from?
  - b) How have these strategies developed since you started engineering school?
  - c) How will these strategies prepare you for your future career?

Responses to Challenges

- 9) Tell me about a specific part of engineering school that has been difficult for you.
  - a) Why do you think it is/was difficult for you?
  - b) What did you do when you realized it is/was difficult for you? What was the outcome of that action?

- c) What advice would you give to an engineering student who is struggling with something similar?

[Turn off recorder]

## **Conclusion**

1. What questions do you have for me?
2. Are you interested in being contacted for further participation in this study sometime in the next year?
3. Do you have any feedback for me that would improve the experience of the next participant?
4. Thank you! [pay \$25, sign human subjects log]



## Second Interview Protocol

**Interview Number:**

**Pseudonym:**

**Date:**

---

### Logistics

Hello! Thank you for volunteering to participate in this interview. First I want to let you know what to expect.

- Our conversation will be **recorded** and then transcribed verbatim. This allows me to revisit what was said accurately and eliminates the need to take notes frantically. Any **identifying information will be removed** from the transcript and the audio will be kept in a secured location.
- Your name will be replaced with a pseudonym--do you have a preferred **pseudonym** (for next letter)?
- I may take some notes along the way, so that I can keep track of things to follow up on without interrupting you.
- The interview should be about an hour and is completely voluntary—you can stop at anytime.
- You will receive the \$25 at the end of our discussion.
- Do you have any questions for me before we begin? [Answer, start recorder]

### Purpose

- Our goal today is for us to have a detailed discussion about your **beliefs about or perceptions of the nature of your intelligence**.
- The discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience and how it can be improved for all students.
- I want to hear your own beliefs—I am expecting that they will be different from the beliefs of others—there is **no right or wrong answer**.
- I aim to understand your perspective, so I will ask questions like “what do you mean by that?” These types of questions can be a bit awkward and may require you to reflect on what you’ve experienced, so I will purposefully leave long pauses after my questions. Take your time—if you need clarification, please let me know.

*Throughout interview, remember:*

- *Respond with “that’s interesting” rather than “that’s good”*
- *Use “tell me more about that,” “you used the word X, what do you mean by that?”*
- *Make connections, “why do you think that’s important in terms of intelligence?”*

## **Interview Questions**

### Goals/Motivation

- 1) Tell me about yourself as a student.
  - a) What does it mean to be a ‘good’ student?
- 2) Tell me about something you do well.
  - a) Things that come easily?
  - b) Things that are challenging?
  - c) Which would you rather work on, an easy project or one that challenges you?

- d) Why do you think some things are easier than others?
- e) What does easy mean to you? Can you give an example?
- 3) If you scored high on an exam, how would you react? Why?
  - a) What would you consider a good score on an exam? Medium? Poor? In relation to the average? (for interviewer: consider grade curves in the answers)
  - b) If you do well, does it make you look smart?
  - c) What if you did better than someone you consider smarter than you are?
- 4) If you scored low on an exam, how would you react? Why?
  - a) What if other students did much better than you?
  - b) What if someone you don't consider as smart as you are did better than you?
  - c) Do you think your professors judge you when you do poorly?
- 5) Do you think exams are a judgement of your intelligence?
- 6) How can a professor motivate you to give more effort to class?
- 7) Does it matter to you if your professor thinks you are smart? Why?
- 8) Tell me about what motivates you to keep pursuing an engineering degree.
  - a) Why do you think it is motivating to you?

#### Beliefs about Effort

- 9) How much effort do you put into classes?
  - a) How do you feel about putting a lot of effort into classes?
  - b) Do you know students who do well without trying?
    - i) How does that make you feel?
  - c) Do you think you will need to work more or less after school?

#### Responses to Challenges

10) Tell me about a specific part of college that has been difficult for you.

- a) Why do you think it is/was difficult for you?
- b) What did you do when you realized it is/was difficult for you? What was the outcome of that action?
- c) What advice would you give to a student who is struggling with something similar?

11) Tell me about a specific part of college that is easy for you.

- a) Why do you think it is/was easy?
- b) What do you think it means for something to be easy or difficult?
- c) Have you ever experienced a challenge that made you consider quitting engineering?

### Motivations

12) If you were to make a pie chart of your study motivations, what percent would you say you are motivated by your grades versus your desire to learn?

- a) Why?
- b) In what ways are grades important to you?
- c) In what ways is learning important to you?

[Turn off recorder]

### **Conclusion**

- 1. Can you think of one question you have for me?
- 2. Are you interested in being contacted for further participation in this study sometime in the next year?
- 3. Can you tell me one thing that would improve the experience of the next participant?
- 4. Thank you! [pay \$25, sign human subjects log]

## Third Interview Protocol

**Interview Number:**

**Pseudonym:**

**Date:**

---

### Logistics

Hello! Thank you for volunteering to participate in this interview. First I want to let you know what to expect.

- Our conversation will be **recorded** and then transcribed verbatim. This allows me to revisit what was said accurately and eliminates the need to take notes frantically. Any **identifying information will be removed** from the transcript and the audio will be kept in a secured location.
- Your name will be replaced with a pseudonym--do you have a preferred **pseudonym** (for next letter)?
- I may take some notes along the way, so that I can keep track of things to follow up on without interrupting you.
- The interview should be about an hour and is completely voluntary—you can stop at anytime.
- You will receive the \$25 at the end of our discussion.
- Do you have any questions for me before we begin? [Answer, start recorder]

### Purpose

- Our goal today is for us to have a detailed discussion about your **beliefs about or perceptions of the nature of your intelligence**.
- The discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience and how it can be improved for all students.
- I want to hear your own beliefs—I am expecting that they will be different from the beliefs of others—there is **no right or wrong answer**.
- I aim to understand your perspective, so I will ask questions like “what do you mean by that?” These types of questions can be a bit awkward and may require you to reflect on what you’ve experienced, so I will purposefully leave long pauses after my questions. Take your time—if you need clarification, please let me know.

*Throughout interview, remember:*

- *Respond with “that’s interesting” rather than “that’s good”*
- *Use “tell me more about that,” “you used the word X, what do you mean by that?”*
- *Make connections, “why do you think that’s important in terms of intelligence?”*

## **Interview Questions**

### Goals/Motivation

- 1) Tell me about yourself as a student.
  - a) What does it mean to be a ‘good’ (or whatever they said) student?
- 2) Tell me about something you do well.
  - a) Things that come easily?
  - b) Things that are challenging?
  - c) Which would you rather work on, an easy project or one that challenges you?

- d) Why do you think some things are easier than others?
  - e) What does easy mean to you? Can you give an example?
- 3) If you scored high on an exam, how would you react? Why?
- a) What would you consider a good score on an exam? Medium? Poor? In relation to the average? (for interviewer: consider grade curves in the answers)
  - b) If you do well, does it make you look smart?
  - c) What if you did better than someone you consider smarter than you are?
- 4) If you scored low on an exam, how would you react? Why?
- a) What if other students did much better than you?
  - b) What if someone you don't consider as smart as you are did better than you?
  - c) Do you think your professors judge you when you do poorly?
- 5) Do you think exams are a judgement of your intelligence?
- 6) How can a professor motivate you to give more effort to class?
- 7) Does it matter to you if your professor thinks you are smart? Why?
- 8) Tell me about what motivates you to keep pursuing an engineering degree.
- a) Why do you think it is motivating to you?
- 9) If you were to make a pie chart of your study motivations, what percent would you say you are motivated by your grades versus your desire to learn?
- a) Why?
  - b) In what ways are grades important to you?
  - c) In what ways is learning important to you?

Beliefs about Effort

- 10) How much effort do you put into classes?

- a) How do you feel about putting a lot of effort into classes?
- b) Do you know students who do well without trying?
  - i) How does that make you feel?
- c) Do you think you will need to work more or less after school?

### Responses to Challenges

11) Tell me about a specific part of college that has been difficult for you.

- a) Why do you think it is/was difficult for you?
- b) What did you do when you realized it is/was difficult for you? What was the outcome of that action?
- c) What advice would you give to a student who is struggling with something similar?

12) Tell me about a specific part of college that is easy for you.

- a) Why do you think it is/was easy?
- b) What do you think it means for something to be easy or difficult?
- c) Have you ever experienced a challenge that made you consider quitting engineering?

[Turn off recorder]

### **Conclusion**

1. Can you think of one question you have for me?
2. Are you interested in being contacted for further participation in this study sometime in the next year?
3. Can you tell me one thing that would improve the experience of the next participant?
4. Thank you! [pay \$25, sign human subjects log]



## Fourth Interview Protocol

**Interview Number:**

**Pseudonym:**

**Date:**

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### Logistics

Hello! Thank you for volunteering to participate in this interview. First I want to let you know what to expect.

- Our conversation will be **recorded** and then transcribed verbatim. This allows me to revisit what was said accurately and eliminates the need to take notes frantically. Any **identifying information will be removed** from the transcript and the audio will be kept in a secured location.
- Your name will be replaced with a pseudonym--do you have a preferred **pseudonym** (for next letter)?
- I may take some notes along the way, so that I can keep track of things to follow up on without interrupting you.
- The interview should be about an hour and is completely voluntary—you can stop at anytime.
- You will receive the \$25 at the end of our discussion.
- Do you have any questions for me before we begin? [Answer, start recorder]

### Purpose

- Our goal today is for us to have a detailed discussion about your **beliefs about or perceptions of the nature of your intelligence**.
- The discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience and how it can be improved for all students.
- I want to hear your own thoughts and perceptions—I am expecting that they will be different from the thoughts of others—there is **no right or wrong answer**.
- I aim to understand your perspective, so I will ask questions like “what do you mean by that?” These types of questions can be a bit awkward and may require you to reflect on what you’ve experienced, so I will purposefully leave long pauses after my questions. Take your time—if you need clarification, please let me know.

*Throughout interview, remember:*

- *Respond with “that’s interesting” rather than “that’s good”*
- *Use “tell me more about that,” “you used the word X, what do you mean by that?”*
- *Make connections, “why do you think that’s important in terms of...?”*
- *Ask for examples, “can you give me an example of when that happened?”*

## **Interview Questions**

### Goals/Motivation

- 1) Tell me about yourself as a student.
  - a) What does it mean to be a ‘good’ student?
  - b) Why do you say you are a “xxx” student?
- 2) If you scored high on an exam, how would you react? Why?

- a) What would you consider a good score on an exam? Medium? Low? (for interviewer: consider grade curves in the answers)
  - b) What if you did better than someone you consider smarter than you are?
  - c) Follow up questions on how you are perceived and how that affects their identity?
- 3) If you scored low on an exam, how would you react? Why?
- a) What if other students did much better than you?
  - b) What if someone you don't consider as smart as you are did better than you?
  - c) Do you care if (peers or professors) judge you when you do poorly? Why or Why not?
- 4) How can (peers or professors) motivate you to give more effort to class?
- 5) Does it matter to you if (peers or professors) think you are smart? Why?
- 6) Tell me about what motivates you to keep pursuing an engineering degree.
- a) Why do you think it is motivating to you?
- 7) If you were to make a pie chart of your study motivations, what percent would you say you are motivated by your grades versus your desire to learn?
- a) Why?
  - b) Is that the same for all of your classes?
  - c) In what ways are grades important to you?
  - d) In what ways is learning important to you?

*Beliefs about Effort*

- 8) Tell me about your learning and studying strategies as a student. (for researcher: push!)
- a) Where do you think these strategies come from? School, peers, family, teachers influence?

- b) How have these strategies developed since you started college? (for researcher: Details  
How did it feel when you had to study more in college? Talk about it, examples)

9) How much effort do you put into classes?

- a) How do you feel when a class requires you to put a lot of effort into it?
- b) Do you know students who do well without trying?
  - i) How does that make you feel?
- c) In your day to day life, do you think you'll need to put in more or less work per day in your job than you do in school?

### Responses to Challenges

10) Tell me about a specific part of college that has been difficult for you.

- a) Why do you think it is/was difficult for you?
- b) What did you do when you realized it is/was difficult for you? What was the outcome of that action?
- c) What advice would you give to a student who is struggling with something similar?

11) Tell me about a specific part of college that is easy for you.

- a) Why do you think it is/was easy?
- b) What do you think it means for something to be easy or difficult?

[Turn off recorder]

### **Conclusion**

1. What questions do you have for me?
2. Are you interested in being contacted for further participation in this study sometime in the next year?

3. Do you have any feedback for me that would improve the experience of the next participant?
4. Thank you! [pay \$25, sign human subjects log]

## **Final Interview Protocol**

**Interview Number:**

**Pseudonym:**

**Academic Level:**

**Date:**

**Interviewer:**

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### **Logistics**

Hello! Thank you for volunteering to participate in this interview. First, I want to let you know what to expect.

- Our conversation will be recorded and then transcribed verbatim. This allows me to revisit what was said accurately and eliminates the need to take notes frantically. Any identifying information will be removed from the transcript and the audio will be kept in a secured location.
- Your name will be replaced with a pseudonym--do you have a preferred pseudonym (for next letter)?
- I may take some notes along the way, so that I can keep track of things to follow up on without interrupting you.
- The interview should be about an hour and is completely voluntary—you can stop at any time.

- You will receive the \$25 at the end of our discussion.
- Do you have any questions for me before we begin? [Answer, start recorder]

## **Purpose**

- Our goal today is for us to have a detailed discussion about your beliefs about or perceptions of the nature of your intelligence.
- The discussion will inform my understanding of the perceptions of engineering students and will help future decisions about the undergraduate engineering experience and how it can be improved for all students.
- I want to hear your own thoughts and perceptions—I am expecting that they will be different from the thoughts of others—there is no right or wrong answer.
- I aim to understand your perspective, so I will ask questions like “what do you mean by that?” These types of questions can be a bit awkward and may require you to reflect on what you’ve experienced, so I will purposefully leave long pauses after my questions.
- Take your time—if you need clarification, please let me know.

*Throughout interview, remember:*

- *Respond with “that’s interesting” rather than “that’s good”*
- *Use “tell me more about that,” “you used the word X, what do you mean by that?”*
- *Make connections, “why do you think that’s important in terms of...?”*
- *Ask for examples, “can you give me an example of when that happened?”*

## **Interview Questions**

### Goal Orientation/Motivation

1. Tell me about yourself as a student.
  - a) What does it mean to be a ‘xxx’ student?

- b) Why do you say you are a 'xxx' student?
2. If you succeeded on an exam, how would you react? Why?
- a) What would you consider succeeding on an exam? (for interviewer: consider grade curves in the answers)
  - b) What if you did better than someone you consider smarter than you are?
  - c) Would you share that with others? If so, who? Why or why not?
3. If you failed to succeed on an exam, how would you react? Why?
- a) What if other students did much better than you?
  - b) What if someone you don't consider as smart as you are did better than you?
  - c) Would you share that with others? If so, who? Why or why not?
4. Does it matter to you if (peers or professors) think you are smart? Why?
5. Tell me about what motivates you to keep pursuing an engineering degree. Why?
6. If you were to make a pie chart of your motivations as a student, what percent would you say you are motivated by your grades versus your desire to learn? Why?
- a) Is that the same for all of your classes?
  - b) In what ways are grades important to you?
  - c) In what ways is learning important to you?
7. Say you have to choose a professor for a core course required for your major. There are two options: 1) A professor where it is more difficult to succeed but you are likely to learn a lot, or 2) A professor where it is easier to succeed, but you likely won't learn as much. Which one would you choose? Why?
- a) Can you think of a situation where your answer might change?

Beliefs about Effort



8. Tell me about your learning and studying strategies.
- a) How did you come to use these strategies?
  - b) How have these strategies changed over time? (for researcher: Details, How did it feel when you had to study more in college? Talk about it, examples)
9. In general, how much effort would you say you put into classes? Why?
- c) Do you feel like you learn more from classes you have to put more effort in?
  - d) Compared to your peers?
10. Think of a subject/class where you had to put in a lot of effort to succeed—describe what that looked like.
- e) How did you feel about that?
  - f) What did you get out of that experience?
11. Think of a subject/class where you could succeed without much effort—describe what that looked like.
- g) How did you feel about that?
  - h) What did you get out of that experience?
12. Think about a student you know who puts in a lot of effort to succeed. What does that tell you about how smart they are?
13. Think about a student you know who doesn't have to put in a lot of effort to succeed. What does that tell you about how smart they are?

#### Responses to Challenges

14. Tell me about a specific time when you received feedback that you weren't performing to expectation?
- a) How did you respond?

- b) What was the outcome of that action?
  - c) Did you learn anything from this experience?
  - d) What advice would you give a person who is struggling to succeed in a similar situation?
15. Do you care if (peers or professors) judge you when you do poorly? Why or Why not?
16. Do you think you learn more from challenging or not challenging experiences?
- e) Does it matter if you succeeded during the experience?

### Conclusion

17. Now that we have talked through all these different ideas related to motivation, effort, and challenges, how would you summarize what you have shared? Did you gain any insights?

[Turn off recorder]

### **Post-interview**

1. What questions do you have for me?
2. Are you interested in being contacted for further participation in this study sometime in the next year? \_\_\_\_\_
3. Do you have any feedback for me that would improve the experience of the next participant?
4. Thank you! [pay \$25, sign human subjects log]

## **Appendix C - Informed Consent Form**

### **KANSAS STATE UNIVERSITY**

### **INFORMED CONSENT FORM**

**PROJECT TITLE:** Research Initiation: The Formation of Engineering Students' Beliefs about Intelligence

**APPROVAL DATE OF PROJECT:** TBD      **EXPIRATION DATE OF PROJECT:** TBD

**PRINCIPAL INVESTIGATOR:** Dr. Amy Betz

**CO-INVESTIGATOR:** Dr. Emily Dringenberg

**CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS:** [arbetz@ksu.edu](mailto:arbetz@ksu.edu), (785)-532-2647

**IRB CHAIR CONTACT/PHONE:** Rick Scheidt or Cheryl Doerr, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785)-532-3224

**PURPOSE OF THE RESEARCH:** The primary purpose of this study is to investigate the beliefs that undergraduate engineering students (first-year and senior) hold about the nature of their own intelligence. This will help us understand how engineering students perceive their own intelligence as well as how the culture of engineering school impacts students' perceptions.

**PROCEDURES TO BE USED:** Participation in this study means that you will complete a one-hour interview about your beliefs about the nature of your own intelligence.

**LENGTH OF STUDY:** ~1 hour

**RISKS ANTICIPATED:** You will be expected to share some of your personal experiences and beliefs. This can be uncomfortable at times, and you will be encouraged to share.

**BENEFITS EXPECTED:** You should gain a deeper understanding of your own experiences and beliefs related to intelligence.

**EXTENT OF CONFIDENTIALITY:** Your interview will be recorded and transcribed, but that transcription will be identified using a pseudonym of your choice. All future publications will not use any identifying information, so your confidentiality will be maintained.

**TERMS OF PARTICIPATION:** I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time

**without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.**

**I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.**

**Participant Name:**

Participant Signature:	Date:
Witness to Signature:	Date:

## Appendix D - Human Subjects Log

Name	Date	Signature

## Appendix E - Initial Codebook

The following is the initial codebook made with the help of the team from Ohio State University, especially Dr. Dringenberg and Amy Kramer. All of the columns that were created are present, but not all were used. The empty columns were made narrow for the purpose of making the table legible. Below is a key for the columns:

<b>Abbreviation:</b>	<b>Full column title:</b>
1	1 <sup>st</sup> round code
2	2 <sup>nd</sup> round code
AVB	Attitude, Value, Belief
M	Aspect of Mindset (if directly tied)
M2	Another link to Mindset
IC	Inclusion criteria
EC	Exclusion criteria
E	Example

<b>Transcript</b>	<b>Line#</b>	<b>Short Description</b>	<b>1</b>	<b>2</b>	<b>A V B</b>	<b>Notes</b>	<b>M</b>	<b>M2</b>	<b>IC</b>	<b>EC</b>	<b>E</b>
Alice	25	Self identifies as "nerd", identified with a clique			A						
Alice	27	Wants to learn, desires knowledge			A						
Alice	28	Equate AP classes with best route to knowledge			V						
Alice	30	Appreciates college because it allows for choice in learning			A						
Alice	30	Values agency			V						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Alice	33	kind of student that makes own choice			A						
Alice	33	Makes own choices			V						
Alice	36	Prefers creative freedom in school work			A						
Alice	38	Likes making own choices			A						
Alice	43	Prefers guidelines over rules			A						
Alice	43	likes independent learning			A						
Alice	54	Responsible student as someone who does work immediately			B						
Alice	56	takes time to "digest" assignments, however does not believe this to be responsible but procrastinator			B						
Alice	64	believes herself to be "somewhat responsible"			B	This practice actually seems to me to be responsible practice					
Alice	71	Doesn't understand how people can space out work on papers			A						
Alice	75	Better focus under stress when working on papers			A						
Alice	86	likes to see how other respond to questions in class and compare			A						
Alice	87	believes in honesty			B						
Alice	87	holds herself accountable			A						
Alice	119	feels relaxed before exams because either know the material or not			A						
Alice	124	excited when gets good grade on exam			A						
Alice	124	if not interested in subject, worries about exam			A						
Alice	132	Success is subjective,			B						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Alice	135	Prefers to get 'A's			A						
Alice	137	Success is improvement			B	Growth mindset					
Alice	149	Excited and proud when did better than someone perceive as smarter than her			B	Success is independent of others, validation is dependent on others					
Alice	156	does not change perception of success when do better than someone on an exam			A	She's not equating success with pride or a letter grade					
Alice	166	Feels pride in success			A						
Alice	177	Smartness is not a narrow (jack of all trades and expert are both smart)			B						
Alice	187	Will share grades/better grades than others to prove point			A	Not sure if relevant?					
Alice	191	Only felt prideful when they first found out they had done better than the "smart" person			A						
Alice	229	Response to poor test: needs to go back and reread the information			A						
Alice	230	Failure is a learning experience			B						
Alice	234	If test was poor, she "didn't make time for studying."			A	Self-correction, implicit growth behavior					
Alice	237	The effect of a bad test is to help set her up for the next one			A						
Alice	242	"If I didn't improve but I still passed the test, then... I'm not happy with it, because I fell back instead of grew."			V						
Alice	246	Her scores don't affect others' scores and vice versa			A						
Alice	247	Proud when others do well			A						
Alice	257	Values others expanding upon their			V						



Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		own knowledge									
Alice	260	"Love it when people are learning"			B						
Alice	276	Only withholds grades if it's significantly higher than someone else			A						
Alice	277	Values others' feelings about their achievements, not making them feel bad			V						
Alice	284	"It's okay, I know what I need to do to improve."			A	Not sure if relevant?					
Alice	289	"There's always so much to learn"			A	Motivations for engineering					
Alice	290	5 Strengths test--outside input			A/V?						
Alice	292	"I'm always wanting to know more and more"			A/B?						
Alice	295	Loves learning about how people take a concept and make something with it			A/V?						
Alice	326	Loves seemingly impossible feats			A						
Alice	339	The possibility of learning things is what motivates her			V/B?						
Alice	343	"Cause why not?"			A/B?						
Alice	350	"Learning's the one thing that people have tried to contain for people but they just can't. 'Cause you're learning no matter what you do."			B	Learning is something that defines humanity; defiance against anything that might try to prevent it					
Alice	356	"I don't see why people aren't excited to learn, 'cause it is just so motivating to get up and go do something with life."			A/B?						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Alice	380	Much more excited to learn than by grades			A						
Alice	418	Motivations for studying vary by class			A	Opportunity vs motivation; cares more about learning when there is something to be learned					
Alice	444	"I think it's maybe because I am such a learner."			A	Talking about analyzing the fit of strengths test					
Alice	445	"I don't think I'm motivated by grades, they kind of just happen."			A						
Alice	446	The only reason she is crushed about bad grades is the loss of "normality."			A						
Alice	450	Dislikes having to worry about repetitive things			A						
Alice	460	"It's life." The importance of learning			B/V?						
Alice	463	"Learning's just so important"			A/V?						
Alice	464	"You're not going to get anywhere in life if you don't learn from what you're doing."			B						
Alice	467	Some stuff you should learn from the past			V/A?						
Alice	468	It's more important to learn from the present than the past and apply it now			V/B?						
Alice	473	"Learning is everything."			V/B?						
Alice	473	"You can't do something without a part of your brain like, taking the concept and digesting it and that's basically learning. At least that's			B						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		what I think.”									
Alice	481	Doesn't want to participate in an easy class; wants to be challenged			A						
Alice	482	"I want to learn all that they can tell me"			A/V?						
Alice	487	"I don't want to be able to get away with anything"			A						
Alice	492	"If I fail but I've learned, then I've succeeded at my own mind"			V/B?						
Alice	496	Knows that it's "bad" that she doesn't study			A	Feels the need to admit wrongdoing when not fitting into a perceived social norm of good practice, even when her own behaviors are healthy					
Alice	508	Learns 30% of material from teacher, <80% from a peer			A						
Alice	543	When seeking help, accessibility is more important than knowledgeability			A						
Alice	558	Easier to remember subject material if it's fun in some way			A	Not sure if relevant?					
Alice	583	Likes looking at other people's perspectives (in terms of learning)			A						
Alice	595	Puts as much effort into classes as she feels is needed			A						
Alice	598	Likes fiction as a way to expand knowledge in a way particular to that author			B	Perspectives					
Alice	605	Engineering classes get more effort because it's a less familiar subject			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Alice	607	Engineering: "spark of curiosity that bloomed one day"			A						
Alice	613	"Technically" learns more from classes that require effort			A						
Alice	616	Doesn't learn as much in English because doesn't need to put in effort			A						
Alice	617	Hated normal English classes because repetitive			A	Repetitive knowledge					
Alice	618	Swore never to step foot in a regular English class because she doesn't learn anything			A						
Alice	636	Thinks it's cool that the researcher noted "excitement" when talking about learning			A						
Alice	652	Perceived themselves as putting a lot of effort into coding while others did it with ease			A						
Alice	653	Feels bad when not having to put effort into English classes			A						
Alice	657	Amount of effort going into a class depends on prior knowledge of subject			A						
Alice	663	If something is easy, you don't learn from it, "you don't grow."			B	Key for this person					
Alice	665	If something is hard, you can learn if you are willing to put in the effort.			B	Key for this person					
Alice	666	If something is hard and you're not willing to put in the effort, you need to find something new that's also hard that you're willing to put the			B	Key for this person					

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		effort into									
Alice	685	Her hardest/first challenging course was hard because it was completely new			A						
Alice	716	Felt isolated in tech school -- m/f ratio, lack of prior experience			A	Added to level of challenge					
Alice	728	When comparing to peers, found it more difficult because she lacked their prior experience			A	Why tech school is hard					
Alice	733	Computer science is difficult to fully understand/fully wrap mind around/"grok"			A						
Alice	737	Advanced program -- expected to learn more quickly			A						
Alice	737	Feelings of isolation combined with high expectations made the class hard			A						
Alice	741	It's hard to understand so she doesn't know whether she's asking "a stupid question"			A						
Alice	742	She realized that the more experienced classmates also didn't know what they were doing			A						
Alice	747	Once she realized she was not the only person lost, it was easier to participate as a group			A						
Alice	750	Computer science/engineering are dependent on teamwork			A						
Alice	752	It is best to have someone with you for inspiration and feedback when			A/V						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		solving problems									
Alice	753	You need to put effort into socializing			A/V						
Alice	754	It is a lie that engineering is for anti-social people			A						
Alice	759	"It was fun. Because... it was finally challenging."			A	On feelings towards difficult class					
Alice	760	"Learning for me is being challenged, learning to overcome the challenge."			B	Key for this person					
Alice	773	After putting a lot of effort into a challenge, she realized she was capable of being an engineer.			A	Considers herself a "creative mind" and had doubts about her ability to be "technical", but realized Engineering is also "creative"					
Alice	771	Engineering is creative			B						
Alice	777	"Sometimes you still have self-doubt."			A	Still has doubts, in spite of knowing she can succeed					
Alice	792	No effort class: "Every. English. Class. Ever. Period. After. Each. Word."			A	Very irritated					
Alice	793	English required no effort because her mother was a reading specialist			A	Coming back to the question of prior experience					
Alice	821	Ties reading with English because you learn how grammar and such works as you read			A	Practice everywhere					
Alice	829	"I don't need to put effort into that." English class			A	English stuff: cracks in the growth mindset					
Alice	830	Doesn't care about writing essays until last minute because she is			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		confident, she can do it									
Alice	831	Despite not needing to put effort into English, she knows some people have to. She feels bad about it.			A						
Alice	854	"You've learned this last year, why are we learning it again?" English class			A	Frustrated with being forced to learn things repeatedly					
Alice	862	Felt bad for judging her friend for having to carry a grammar book, but also was certain he really did understand the material and was using it as a crutch			A	Judging friend for not wanting to put in effort					
Alice	864	"Effort, it's important!"			V						
Alice	877	"Not having to put effort in English allowed me to expand on when we wrote in English"			A	Low effort situation turned into an opportunity to stretch herself in a different way					
Alice	878	"Cause that's something that they can't control."			A	Value freedom? Not sure if relevant					
Alice	889	Doesn't tie effort into "intelligence or smartness."			B						
Alice	894	More effort != less smart; more effort == brain not coded for specific task			B	Not clear whether she meant the brain isn't coded for the actual task or the method of learning					
Alice	897	More effort can also mean you're excited about it			B/V?						
Alice	903	"That doesn't mean I'm smart, that just means I understand"			A	On grammar and parts of speech					
Alice	908	Steven Hawking is perceived as "super smart" because he was able			A/B?						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		to understand a lot of things, and overcome unique challenges									
Alice	910	Describes kids/young adults at different age groups as smart, each in a different way			A	Everybody is smart					
Alice	916	"Everyone is smart"			B						
Alice	913	Effort put into a task doesn't change how smart you are			A/B?						
Alice	917	Smart is a subjective term			B						
Alice	921	"Beauty is in the eye of the beholder but so is intelligence"			B	External not in a vacuum					
Alice	925	"People thought I was smart because I didn't have to put in effort, but that's just how they perceived it."			A/B?						
Alice	926	"People told them" that smart meant not needing to put in effort			B	Society?					
Alice	931	"Those other students are just as smart, they're just not as knowledgeable as the one who's excelling"			B	Smart vs. Knowledgeable					
Alice	942	Perceives that most people think that someone has knowledge because they're intelligent			A	Others, not self					
Alice	947	Doesn't think intelligence is a base thing; is a result of knowledge			B	Cause/effect					
Alice	949	Kindergartens are intelligent but on a different level from Steven Hawking			A						
Alice	950	Stephen Hawking has expanded on his intelligence and knowledge --			V						



Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		started as a child									
Alice	963	"Everybody, literally everybody is smart, they're just smart in a different way"			A	Interviewer paraphrasing participant					
Alice	967	Dislikes when people use the word "dumb" outside of joking			A						
Alice	977	Sister is one of the smartest people she knows because compared to others she has through conscious choice expanded her knowledge			V	Values choosing to try to learn					
Alice	980	Her subjective definition of smart is choosing to become more knowledgeable			B/V	Pursuit of intelligence					
Alice	1004	"As a student overall... Succeeding is getting what you want out of it, failing is making yourself endure something you know you're not going to enjoy"			V/B	Success vs. Failure					
Alice	1008	Excited to give an answer different from other students			A	Uniqueness?					
Alice	1015	Likes learning history from brother rather than teacher because brother is passionate about it			A	Passion for learning					
Alice	1031	History class is full of needless information; can't actually affect how students see the future			A						
Alice	1036	Talks about WW1, prevention of WW3... I get the impression she feels that history classes are focusing on the wrong information			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Alice	1052	Likes learning about ancient technology for the sake of building upon it			V						
Alice	1055	Feels she has not succeeded in history because she doesn't retain information			A						
Alice	1056	Does not retain information because she does not find it interesting			A						
Alice	1059	Nobody teaches about the Nordic countries			A	Does want to learn history, but wants to learn something else					
Alice	1075	Failing because she fails her own expectations about what she's supposed to learn			A/V?						
Alice	1103	If struggling in a class, find a way that works for one's own self, individualized			B						
Alice	1104	Teaching in class is done for groups rather than for individuals			A						
Alice	1123	Did well at pre-calc because it was fun			A						
Alice	1127	Pride is transient; later on she doesn't care enough to be prideful			A	Pride					
Alice	1155	Music makes sense because it's never completely unique; doing the same thing different ways makes it vastly different, but still at the core it's the same			A						
Alice	1179	Being able to teach knowledge and pass it on is a form of success			V/B	Success					
Alice	1184	If something is not challenging, she			A	Different from English					

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		is usually learning how it challenges others and how to teach it									
Alice	1186	Prefers something that challenges herself because she is expanding her knowledge instead of self-awareness			A/V?						
Alice	1189	Can push oneself only so far before finding common trends but in contrast, knowledge is infinite			B/V?						
Alice	1192	"I'm happy just learning and learning"			A						
Alice	1195	"Succeeding to me is learning"			V/B						
Alice	1196	If she hasn't succeeded in learning something, then something is wrong			A						
Alice	1205	Everyone has a different, subjective definition set for "intelligence," "knowledge," and "smart," because everyone is different			B						
Alice	1209	"How can we know?" what intelligence is, because even if it's a set thing, it can be so subjective			A/B?						
Janice	29	Overachiever			A						
Janice	31	"Because of my own pride"			A	Why she takes hard classes					
Janice	32	Studies a lot does well			A	Perception of self					

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	38	Overachiever = more than bare minimum			A						
Janice	39	really competitive			A						
Janice	40	Pride tied to competitive			A						
Janice	45	To do well = get A			A						
Janice	45	Get A is not always best definition of do well			A	Judgement of self					
Janice	52	Compares self to others and decides if doing better or worse			A	Judgement of self based on others					
Janice	64	Wants to be the best for own selfishness			A						
Janice	65	Nobody else puts pressure to be the best			A						
Janice	75	Selfishness: For own gain, not for competition			A	Contradiction					
Janice	79	Competitive with people inside her									
Janice	85	Best in class = highest grade			A/B?						
Janice	93	Takes honors class not for difficulty or increased learning but for prestige			A						
Janice	100	Prestige			V	Prestige/Judgement from others					
Janice	110	Will only take hard class if thinks can succeed			A/B?	Prestige, success					
Janice	121	Won't help others with test grades			A	Competition					
Janice	122	Won't boast about test scores			A						
Janice	128	Ashamed of bad test scores			A						
Janice	144	Test score is a measurement of success			B	Validation? Success					
Janice	161	Curve: A = happy			A/V						
Janice	166	Top tier			V						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	178	Smarter person does worse; reaction depends on own score			A	Competition					
Janice	188	If friend, comfort person with poor test score			A	Relations					
Janice	199	Whether they care about someone else doing well depends on relationship			A	Relations					
Janice	204	Competition, friends are not threat			A						
Janice	226	Judge boastful people			A/V?						
Janice	228	If someone wants to know how you did on a test, they are looking for a chance to boast			A						
Janice	236	Does not occur to her that someone might want to share in celebrations instead of boasting			A						
Janice	241	Self-conscious about low scores			A						
Janice	250	"I equate my grades so much to me as a person, like my self-worth."			B						
Janice	251	Thinks it's bad to equate grades to self-worth			A						
Janice	260	Would cry over bad test grade			A						
Janice	261	Not want to talk about bad grade except for mother			A						
Janice	266	Would only let people know they got a bad grade to avoid relationship misunderstandings			A						
Janice	277	"Grades are so important to me"			V						
Janice	280	"Worthless"			A/B?						
Janice	295	Would be okay with a low percentage grade if the whole class			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		was low									
Janice	302	Goes to tutoring because competition			A						
Janice	312	Doesn't want to be perceived as dumb or smart, but average			A						
Janice	318	Prestige			V						
Janice	319	Considers self "smarter than not smart"			B						
Janice	328	Doesn't want to be perceived as a genius because it is boastful and pretentious and untrue			A						
Janice	341	Doesn't care what professors think because her test grades should prove her worth			A						
Janice	347	Cares less about a professor's opinion in a large class because teachers don't think about individual students much			A						
Janice	355	In a small class wants to be perceived as middle of the pack			A	Contradicts earlier desire to be the best					
Janice	366	Not more noticeable in first 3 rows			A						
Janice	373	Motivated by desire to work in medical field			A	Motivation					
Janice	409	Just feels like wants to work in medical field			A	Not decisive on why they want it					
Janice	424	Impacting lives for the better			V						
Janice	431	Grades are much more important than wanting to learn			A						
Janice	433	Will put more time into studying something she's interested in			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	450	If interested, grades and learning are equally important			A						
Janice	470	Studying for a disliked class is a chore for getting ready for exams			A						
Janice	477	Grades are tied to self-worth			B	Self-worth					
Janice	478	Grades are a measure of success			B						
Janice	485	Skillsets are the importance of learning			A						
Janice	487	Skillset to do things			V						
Janice	525	Would take the easier class as long as it wouldn't set her back later--for the grade			A						
Janice	581	Felt stupid for not going to SAS tutors after being advised to do so and got a bad grade			A						
Janice	588	Annoyed and disappointed with self for not following advice			A						
Janice	596	Mad at self for bad grade			A						
Janice	597	Disappointed at self for missed opportunity			A						
Janice	606	Will put in very little effort if she can still get a good outcome (grade)			A						
Janice	607	Efficient, pragmatic			V/A						
Janice	614	Devotes most of her time to harder classes			A						
Janice	621	If material is easy to learn, she is still learning; more effort != more learning			A						
Janice	628	Will have to put more effort to do better than someone else			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	637	Will have to work really hard to do well			A	Contradicts earlier pragmaticism					
Janice	643	Not making time for studying			A						
Janice	659	Thinks she should be studying instead of being with friends			A						
Janice	685	"crazy" enough to take a class			A						
Janice	687	Felt really behind for not having previous physics experience			A						
Janice	693	Getting an A made effort and asking for help worth it			A						
Janice	703	Frustrated with self for not understanding			A						
Janice	705	Annoyed to be not as equipped as classmates			A						
Janice	710	You have to put a lot of time and effort into a class to succeed, especially if you're behind			A/B						
Janice	716	Hindsight the hard class wasn't so bad, but during it, it was awful			A						
Janice	749	Nice to have a low effort class when the schedule was very full			A						
Janice	758	Easy class was boring			A						
Janice	769	"Very smart even if they have to work hard" as long as still successful			A						
Janice	777	Does well, low effort: really smart, low work ethic			A						
Janice	784	Does well, low effort: Probably doesn't know how to study			A						
Janice	787	Does well, low effort: frustrating,			A						



Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
		jealousy									
Janice	789	Does well, low effort: probably does poorly in other classes because of missed homework			A	Sour grapes conjecture					
Janice	792	"I can't just go in a test and get a good grade."			A						
Janice	795	Wants friends who encourage good habits			A						
Janice	823	Sad to no longer be on Varsity			A	Lack of success					
Janice	824	Felt her mother was disappointed in her			A	Judgement					
Janice	825	"She thought I was just like quitting"			A	Emphasis on effort					
Janice	832	Gets scared that her mother will be mad/disappointed			A	Judgement					
Janice	834	Mother has never given her reason to feel that she is mad/disappointed			A	Perception vs. reality					
Janice	845	Needs to live up to the high bar her brother set			A						
Janice	860	Obsessed			A						
Janice	884	After effort: got personal record, but not as good as expected			A						
Janice	887	"a lot of stress" on running			A						
Janice	890	Effort felt pointless because she didn't get "amazing outcome that I was expecting to"			A/B	Effort					
Janice	903	"I kind of figured that I'm not going to be like this amazing runner"			B						
Janice	905	Thought she could be an exceptional runner with effort, but was wrong			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	906	Still runs, but with little effort			A						
Janice	913	If you put in effort, see results: "Straight up lie to them"			B						
Janice	914	maybe not a lie because maybe it will work, even though not for her			A	Self-correction					
Janice	917	Still worth the effort because she doesn't have the regret of not trying			A	Regret					
Janice	933	Sad if people think she's not smart			A						
Janice	938	"I feel like I am at least average"			A						
Janice	944	School is important, so she cares if she is judged there			V	Gabe up after failure					
Janice	950	Cares if professors judge because she fears them giving up on her			A						
Janice	952	"I wouldn't want them to like think that I was just not smart, she won't understand anyway."			A						
Janice	957	Wants professors to help her when she needs, therefore afraid of judgement			A	Kind of repetition of the two above					
Janice	962	If they think a student won't want/can't grasp information, professors might not want to help			A						
Janice	971	Waste of a professor's time to help not-smart student			A						
Janice	977	Hasn't encountered professors who wouldn't help			A						
Janice	998	more challenging == remember more			A						
Janice	1000	More challenging == more satisfaction			A						

Transcript	Line#	Short Description	1	2	A V B	Notes	M	M2	IC	EC	E
Janice	1003	More proud of A in challenging class than in non-challenging class			A						
Janice	1010	Success matters, but still learning anyway			A						
Janice	1020	Upset if graded upon completion			V	Grades					
Janice	1027	If learning was the goal, then if she tried it is a success			A						
Janice	1037	Grades are a measurement of success			B						
Janice	1039	"I want to be successful"			V						
Janice	1043	Defined success as grades herself			A						
Janice	1049	"My grades are really important to me"			V						
Janice	1070	Unsure how she feels about the importance she puts on grades			A						
Janice	1071	Competitive but internalizes it			A						
Janice	1075	Needs to find a different scale for self-worth			A						
Janice	1086	The first B makes the next less stressful			A	Too much success a bad thing?					
Janice	1092	Maybe if she already had a B, she would be less focused on the grade and more focused on the material			A						
Janice	1096	Doesn't want the B to happen; fear			A						

## Appendix F - Student Recruitment Survey

Please rate how much you currently agree or disagree with each of the following statements related to your intelligence.

	Strongly Agree	Agree	Mostly Agree	Neither Agree nor Disagree	Mostly Disagree	Disagree	Strongly Disagree
You have a certain amount of intelligence, and you can't really do much to change it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your intelligence is something about you that you can't change very much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To be honest, you can't really change how intelligent you are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You can learn new things, but you can't really change your basic intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are you 18 years of age or older?

- ☐ Yes  
☐ No

What year are you in school?

- ☐ Freshman, first year in university

- ☐ Freshman, previously attended another university/junior college
- ☐ Sophomore
- ☐ Junior
- ☐ Senior

How do you describe yourself?

- ☐ Female
- ☐ Male
- ☐ Transgender
- ☐ Other/Do not identify as female, male, or transgender
- ☐ Prefer not to identify

What is your ethnicity?

- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino
- ☐ Prefer not to identify

Are you and American Citizen?

- ☐ Yes - Born Citizen
- ☐ Yes - Naturalized Citizen
- ☐ No
- ☐ Prefer not to identify

What is your race? Please check all that apply.

- ☐ Native American or Alaskan Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or other Pacific Islander

- ☐ White
- ☐ Hispanic or Latino
- ☐ Prefer not to identify

Are you a first generation college student (None of your parents or guardians completed a Bachelor's degree)?

- ☐ Yes
- ☐ No
- ☐ Prefer not to identify

Please provide your contact information below, and whether or not you are interested in participating in an hour long interview regarding your beliefs about intelligence.

Your contact information will not be given or sold to any other parties and will not be used to spam you.

First Name

Last Name

Email

Confirm Email

Are you interested in participating in the interview described above?

Are you willing to allow your responses to be used for research purposes? If you check yes, you are providing consent that your responses can be used for educational research purposes. Your responses will be de-identified, so the use of your responses for research purposes will not be linked to your name. Your choice of whether or not to allow your responses to be anonymously used for future research has no effect on your grade in any course.

- ☐ Yes
- ☐ No

→